

**A STUDY OF HOME INSPECTION  
AND WARRANTY PROGRAMS**

**VOLUME I.**

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**For:**

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## A Study of Home Inspection and Warranty Programs

The U.S. Department of Housing and Urban Development (HUD) is currently responsible for correcting serious housing defects discovered in certain types of previously occupied houses insured by the Federal Housing Administration (FHA). In debate over extensions of this responsibility during consideration of the Housing Authorization Act of 1976, Congress was uncertain as to the need for, or interest in, expanded protection for buyers of existing houses. As a result, Section 9 of the Act incorporated a mandate to the Secretary of Housing and Urban Development to conduct a study to "investigate the need for, cost and feasible structure of a national home inspection and warranty program."<sup>1/</sup>

In response to this mandate, HUD contracted with Mathematica Policy Research, Inc. (MPR) to carry out a study of Home Inspection and Warranty Programs. The study conducted by MPR involved three major data collection efforts:

- (1) A review of the current status and projected growth of private and public programs in the Home Inspection and Warranty (HIW) field, including collection of data on claims experience and administrative costs;
- (2) A random national telephone survey of 1,819 homeowners who purchased previously occupied houses since November 1976, to determine how likely the respondents would be to purchase several alternative HIW program options; and
- (3) A second random national telephone survey of 1,814 homeowners who purchased previously occupied houses about two years prior to the survey, to determine the incidence of housing defects and the costs of repair.

Separate analyses of each data set were conducted, as well as an integrated analysis designed to identify potentially feasible national HIW program options.

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<sup>1/</sup> The mandated study was directed specifically toward existing houses with FHA mortgage insurance. The Conference Report also

entered the field since 1970. Within the past year, a number of these firms have joined to form the National Home Warranty Association.

There are two major types of HIW programs offered by different firms. One type provides a detailed inspection of and report on the condition of the house prior to sale, with an option to purchase a warranty on major structural and mechanical elements of the house which are found to be in satisfactory condition. This type of program is primarily to buyers. The National Association of Realtors (NAR) has approved a number of such plans offered by various firms in the field and has promoted their use by its members.

The second type of HIW program provides a repair service normally covering the mechanical systems of the house and major appliances with at most a limited inspection. Such plans are purchased primarily by sellers of houses, although they are also marketed to buyers.

Currently, the major firms offering the repair service-type of program appear to be considerably larger than the inspection-type firms (in terms of number of policies in force), and to be growing at a faster rate. However, firms of both types are projecting continued growth in the absence of any new governmental or legal actions which might interfere with their markets.

In general, existing public, inspection or warranty-type programs are significantly different in scope and intent from the private HIW plans. A number of local governments have established mandatory pre-sale inspection programs within their jurisdictions. None of these programs involves any warranty of the house following the sale. The federal government, under Section 518 of the National Housing Act, provides to certain FHA homeowners a program which authorizes reimbursement for repairs of serious defects found after the sale of a previously occupied house if the defects could reasonably have been identified by a proper inspection.

## 2. Demand for HIW Programs

Estimates of demand by home buyers were made for the following five potential HIW plan options:

- (1) A one-year warranty, with a \$100 deductible, covering only structural components of the house which pass a limited inspection. (Initial price tested--\$75)
- (2) A detailed inspection and one-year warranty plan with a

option (2). (Initial price tested--\$260)

- (4) A detailed inspection and one-year warranty, with a \$100 deductible, covering structural components, mechanical systems, and major appliances. (Initial price tested--\$275)
- (5) A one-year repair service for major mechanical systems and major appliances, with no inspection. Repairs are made by a representative of the warranty firm and cover all costs greater than \$50. (Initial price tested--\$200)

In general, demand among all home buyers is quite low for all of the tested HIW program options. At the prices indicated, no option would be expected to be purchased by as many as 10 percent of all home buyers. There are no significant differences in demand between FHA and non-FHA homeowners, in spite of sizeable differences in such characteristics as age of head, family income, price of house, and age of house.

The second and fifth options correspond to the two major types of HIW programs currently sold by private firms. At the initial tested prices, which correspond to the market prices for these two plans, the inspection plan (2) is demanded by about 5 percent of all home buyers, while the repair service plan (5) is demanded by only 2 percent of home buyers. This pattern contrasts with the relative success of the private firms offering these plans. In part, this contrast may be due to the fact that the repair service plans are most frequently sold to house sellers rather than buyers.

Demand is quite sensitive to price for all options. Price sensitivity was tested by estimating demand for each option at prices above and below the initial price. Increasing the price of each option by about one-third sharply reduces demand in all cases. Reducing the tested prices by the same amount would increase overall demand, in some cases, to as high as 20 percent of the respondents. This price sensitivity makes the relative ranking of the options highly dependent upon the price levels chosen for the comparison. However, at realistic prices of ongoing programs, determined in the analysis of feasible HIW programs, which identified prices that cover all costs, the two-year plan covering structural and mechanical systems is clearly the preferred option. It would be demanded by about 11 to 12 percent of all home buyers. No other plan would be demanded by more than about 9 percent of the respondents.

A look at the preferences of home buyers for specific features

of HIW programs largely reinforces the conclusions of the analysis demand for the overall program options. In general, plans with inspections are preferred to plans without inspections. Home buyers prefer coverage of structural and mechanical components of their houses to coverage of appliances; they prefer multiyear plans to single-year plans; and they prefer to arrange their own repairs rather than have an HIW firm send someone to make the repair.

### 3. Incidence and Costs of Housing Repairs

The majority of homeowners do not experience a major (costing over \$100 to repair) unexpected repair problem during the first two years in their homes. Fifty-two percent of FHA homeowners and over 60 percent of non-FHA homeowners report no such problems. Only 12 percent of non-FHA and 23 percent of FHA homeowners experience more than one major problem during these two years. When repair problems do occur, the great majority occur during the first year after purchase of the home. Eighty percent occur in the first year; 55 percent take place in the first six months.

Problem rates among FHA-insured houses are consistently higher than the rates among non-FHA houses. This probably reflects the fact that FHA homes are more likely to be located in urban areas and older, declining neighborhoods. Problem rates increase significantly with the age of the house; houses more than ten years old are more than twice as likely as newer houses to have some repair problems.

Structural and mechanical problems account for approximately 60 percent of all major problems. Repairs to appliances account for only 12 percent of such repairs. Two specific problem types--plumbing and roofs--account for over 40 percent of all major repairs.

The average cost of repairing a major unexpected housing problem is \$530 for FHA homeowners and \$481 for non-FHA homeowners. Higher average repair costs per problem in FHA-insured houses are consistent across most problem types. Among frequent types of problems, roofs are on average the most expensive to repair, followed by other structural defects. Defects in appliances are the least expensive problems to repair.

The average FHA home buyer can expect to spend \$441 during the first two years in the house, to pay for major unexpected repairs. The average homeowner who purchased a house without FHA mortgage insurance can expect to spend \$255 for such repairs during those initial two

Data from the Needs and Demand Surveys, as well as the investigation of existing HIW programs, were used to determine whether there are feasible HIW programs which could be provided by the federal government. Feasible programs were defined as programs in which total revenues could equal all costs, and in which certain minimum participation levels were met.

Looking first at FHA homeowners, who were the primary focus of Congressional interest, HIW programs offered on a voluntary basis to FHA home buyers are not, in general, feasible. No voluntary plan covering structural components of FHA houses could be provided, at a price which would cover all costs, that would attract even five percent of FHA home buyers.

One way to design a feasible HIW program for FHA homeowners would be to subsidize the cost. With a subsidy of \$100 per warranty, all five HIW plan options defined in the Demand Survey would become feasible on a voluntary basis. However, even with this sizeable subsidy, participation in the plans would remain relatively low--below 20 percent. Making participation in an HIW program mandatory for FHA home buyers would also result in feasible programs for all five program options, although it is estimated that about 13 percent of current FHA home buyers would choose not to obtain FHA mortgage insurance if mandatory participation were enforced.

If a government-run HIW program were offered on a voluntary basis to the general public, feasible programs could be developed for all five HIW program options. While participation rates would remain fairly low, no subsidy would be required to make these programs feasible. The program with the largest participation rate would be the two-year inspection and warranty plan covering structural and mechanical systems. Slightly over 11 percent of all buyers of existing houses would participate in that plan. Due to the higher rates of claims and claims costs experienced in FHA-insured houses, a sizeable cross-subsidy of FHA homeowners by non-FHA homeowners takes place in all plans which cover structural components.





The short four-month schedule of the Home Inspection and Warranty Study has required extraordinary efforts on the part of many people. The project could not have succeeded without the dedication and hard work of all of them. However, a number of individuals deserve special mention for the key roles they have played throughout the project.

As Principal Investigator, Richard Kaluzny has been responsible for overall direction of the research design and analysis effort. Throughout the project, the research team of Irving Crespi, James Ohls, and Cynthia Thomas has worked closely with Dick on all facets of the research. While the final report represents the joint efforts of all the efforts, each of the researchers concentrated on particular parts of the analysis. Cynthia took responsibility for analysis of the existing HIW programs (Chapter II). Irv analyzed the data from the Demand Survey (Chapter III). Dick concentrated on the analysis of the Needs Survey (Chapter IV), and Jim was responsible for the integrated analysis to identify feasible national HIW programs (Chapter V).

Important substantive contributions to the report were also made by a number of other individuals. David Long collected data from HUD area office personnel administering the Section 518 programs, and was responsible for generating the estimates of administrative costs (Appendix G). Anthony Muller, in addition to his role as Survey Site Manager in Denver, conducted the research into the legal precedents for home warranties (Appendix C). Kenneth Rosen of Princeton University prepared the estimates of the national market for potential HIW programs (Appendix F). Trimble Steinbrecher contacted the local officials involved in presale inspection programs for the review of public programs in Chapter II, in addition to her efforts as interviewing supervisor in Denver.

Three other persons deserve special recognition for their outstanding efforts during the study. Lois Blanchard, in her capacity as Survey Manager, was directly responsible for all survey design and field activities, which were handled very well under extremely tight schedule constraints. Jerilyn Fair, as Project Manager, was responsible for the complex process of scheduling and budgeting of tasks, as well as monitoring day-to-day progress of the entire project. In addition, Jeri directed the task of collecting the non-FHA sample from county records. Diana Walters, as the lead research assistant on the project, made a contribution to the overall effort which can be measured, only partially, by the many long hours she has spent on the study.

All of the MPR departments involved in the HIW study functioned well in meeting the always rushed deadlines of the project. Within those departments, the following individuals deserve mention:

Ericole DiBattista--Technical Support; Robert McCallier--Input/Control; and Patricia Uveges--Production Control.

Research Division: John Mamer--Director of Research Support; and Julie Cheng, Sandra Jamieson, and Scott Ricketts--Research Assistants.

In addition, consultants Douglas Olson, Michael Munson, and Chester Rapkin made many valuable comments on the study; particularly the early design phase.

Many individuals outside of MPR were very helpful at various stages of the project. These included: officials at HUD, numerous county and local officials; officers and employees of Home Inspection and Warranty firms; local real estate agents; and officials of the National Association of Home Builders and the National Home Warranty Association. Without their assistance, the study could not have been completed. Particular thanks go to Norris E. Brown, the HUD Technical Representative, whose advice and support throughout the project have been very helpful.

J. Alan Brewster  
Project Director

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## INTRODUCTION

### A. BACKGROUND OF THE STUDY

The purchase of a home is the largest single expenditure most people ever make, but the decision to purchase is often made without complete information concerning the structural soundness of the dwelling or the condition of the mechanical systems of the house. As a result, new owners sometimes encounter major unexpected defects in their houses and experience significant repair bills within a relatively short period of time following the purchase of their homes. These repairs can become a problem for a homeowner whose financial resources may have been depleted by the purchase of the house.

There are several steps which a prospective home buyer can take to reduce the risk of incurring a significant repair expense during the period following the purchase of a house. First, the buyer of the house can attempt to inspect the house ~~care~~fully prior to purchase, although the effectiveness of this action depends heavily on the technical knowledge of the buyer. Alternatively, the buyer can hire a professional to inspect the house and report on its condition. In either case, the buyer's risk is reduced simply by having additional information about the condition of the house. If any problems are found during an inspection, the buyer can take these into account in deciding what price to offer for the house.

Another way of reducing the risk of having to bear the expense of a major repair is to share that risk with other home buyers. If the

trade the certainty of a relatively small payment of a warranty or  
ance plan for protection against the possibility of a major repair

Historically, home buyers have not made extensive use of ei  
professional inspections or risk-sharing schemes such as warranties  
In recent years, however, there has been growing interest in formal  
protections for home buyers among all three of the groups involved  
the typical home purchase--buyers, sellers, and real estate agents.  
increased interest of home buyers for inspection and warranty progr  
is, in all likelihood, an outgrowth of the general consumer movemen  
the United States during the past decade. Furthermore, the interes  
among home sellers and real estate agents may also be an indirect r  
of this movement, in that these groups appear to have become increa  
concerned in recent years about their possible legal liability for  
costs of repairing defects found in newly purchased homes. To be s  
no U.S. court has yet found either sellers of previously occupied h  
or their real estate agents to be liable for such defects, except i  
cases where the defects were deliberately hidden.<sup>1/</sup> Nevertheless,  
is clearly a great deal of concern among many real estate agents ov  
what they perceive as some danger of increased liability for undisc  
defects, and this concern has apparently been conveyed to home sell  
as well.<sup>2/</sup> Providing formal protections to home buyers is seen by

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<sup>1/</sup>Appendix C contains a review of the legal history of the liab  
of sellers and agents in the sale of real property.

<sup>2/</sup>Undoubtedly, adding to this concern was the proposed "Truth i  
and" bill, which was introduced in the House of Representatives in 1972.

reduced.

In response to these interests, a number of private and public programs have been developed which offer various forms of protection to the home buyer against unexpected housing defects. These programs generally provide: (1) an inspection of the house prior to the decision to purchase; (2) a warranty on some components of the house; or (3) a combination of an inspection and a warranty.

Firms offering some form of home inspection service have been in existence for a relatively long time; however, warranty programs have developed only more recently. The first warranty program of any significant size was the Home Owners Warranty Program (HOW), which was developed by the National Association of Home Builders to cover newly built houses.<sup>1/</sup> Only within the past five years have a significant number of firms begun to offer warranties to buyers of previously occupied housing.

Two major types of warranty programs for previously owned houses currently exist in the private market. One type involves both a detailed inspection of the house and a warranty of structural and mechanical systems found to be in satisfactory condition during the inspection, for a period of up to two years from the date of inspection. The National Association of Realtors (NAR) has developed a set of standards for this type of home inspection and warranty plan. The NAR has also approved the programs of a number of firms which offer plans that meet these standards and is promoting their use by member real estate brokers and agents.

together with the largest of the NAR-approved programs, have recently joined together to form the National Home Warranty Association.

These two types of warranty programs currently account for well over 90 percent of the total U.S. market for warranties on existing houses. Recently, however, a number of new firms offering variants of these two types of coverage have begun to enter the market.

In the public sector, some state and local governments have begun to provide protection to home buyers by requiring sellers to have inspections conducted prior to sale. In addition, the federal government, under Section 518 of the National Housing Act, has taken responsibility for correcting defects found in certain categories of housing approved for FHA mortgage insurance. For these categories of existing houses, the Section 518 program authorizes the Department of Housing and Urban Development (HUD) to assume costs of correcting serious housing defects affecting the life and safety of the occupants which could have been uncovered by a thorough inspection of the house at the time of sale.

It was the debate in Congress over the most recent extension of this Section 518 program which led directly to the research described in this report. Congress was uncertain as to the need for or interest in expanded protection for buyers of existing houses. As a result, Congress extended the program and accompanied the extension with instructions to HUD to conduct a study of potential national home inspection

with respect to an effective program for protecting home buyers from hidden or undisclosed defects seriously affecting the use and liveability of the home, which would be applicable to existing homes financed with mortgages insured under the 1976 Act.<sup>1/</sup> In the study and report, the Secretary shall particularly investigate the need for, cost, and feasible structure of a national home inspection and warranty program, with respect to such homes, to be operated by the Federal Government out of fees assessed on the home buyer and amortized over a period of two years.

In response to this Congressional mandate, HUD selected Mathematica Policy Research, Inc. (MPR) to carry out a study of Home Inspection and Warranty programs. This report contains the results of that study.

#### B. OVERVIEW OF THE STUDY

The MPR research design for the Home Inspection and Warranty (HIW) study had three major objectives:

- (1) to assess the dimensions of the problems that hidden or undisclosed dwelling unit defects pose to buyers of previously occupied homes;
- (2) to determine the demand for alternative HIW programs that meet the needs of the home buyer for protection from hidden defects; and
- (3) to evaluate alternative HIW programs with respect to cost, effectiveness, and consumer acceptance.

These aims were accomplished by undertaking three data collection and analysis efforts, followed by an analysis which integrated the three

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<sup>1/</sup> The Conference Report subsequently urged the Secretary to include non-FHA-insured houses in the study as well.

individuals who are responsible for the operation and marketing of private HIW programs, and persons involved in the operations of public programs designed to protect consumers against hidden defects in resale houses. These interviews, which were conducted both in-person and by telephone, obtained information about operating costs, business volume and growth, prices, and general industry problems and prospects.

Following the review of current public and private HIW programs, two separate random national surveys of individuals who had purchased previously occupied single-family houses were conducted in March and April of 1977, to determine the need and demand for some form of HIW program.<sup>1/</sup> In the Needs Survey, 1,814 individuals who had purchased their homes approximately two years prior to the survey were asked a series of questions concerning their experiences with housing defects which occurred after they bought their homes. The survey was designed to collect information from respondents on the numbers of problems occurring which cost more than \$50 to repair. In addition, detailed data on up to six major problems (costing more than \$100) were collected to permit an in-depth analysis of the types of problems encountered and their associated repair costs.

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<sup>1/</sup> In conformance with FHA procedures, "single-family houses" were defined to include dwellings with up to four family units.



mates of the demand for five specific HIW program options at a variety of prices. Further analysis of alternative feasible HIW options was accomplished by also obtaining data on respondent preferences for a number of specific components of the HIW plans.

In the selection of the samples of recent home buyers to be interviewed in both surveys, considerable attention was paid to the direct concern of Congress for information concerning homeowners whose houses were financed with FHA-insured mortgages. In particular, the samples for each survey were stratified so that half of the respondents to each survey were homeowners with FHA mortgage insurance and half were homeowners who did not have FHA insurance. This stratification permitted independent analysis of the FHA and non-FHA sectors of the population.

In an assessment of the surveys, it is important to note the distinguishing characteristics of the two populations. Table I.1 presents a comparison of the characteristics of the FHA and non-FHA samples.<sup>1/</sup> Along most dimensions, FHA homeowners are quite different from owners of non-FHA houses. FHA homeowners are younger and have noticeably lower incomes than their non-FHA counterparts. Seventy-four percent of the FHA homeowners were less than 35 years old at the time of the purchase of their home, compared to 51 percent of non-FHA homeowners.

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<sup>1/</sup> The data shown combine the samples from the Needs and Demand Surveys, which were very similar in all characteristics.

### Age of Chief Wage Earner

Under 35	74	51
35 - 54	23	36
55 or older	3	12

### Education of Chief Wage Earner

College	57	58
High school graduate	32	28
Less than high school graduate	11	13

### Annual Family Income

\$12,000 or less	21	22
\$12,001 - \$16,000	25	16
\$16,001 - \$21,000	27	20
\$21,001 - \$26,000	13	12
Over \$26,000	7	16

### Price of House

\$21,000 or less	22	18
\$21,001 - \$28,000	31	16
\$28,001 - \$35,000	23	16
Over \$35,000	20	39

### Age of House

Less than 10 years	17	28
10 - 29 years	59	44
30 years or more	24	28

### Number of Homes Owned

One	68	42
Two	20	27
Three or more	12	30

	<u>FHA</u> <u>(Percent)</u> <sup>a/</sup>	<u>Non-FHA</u> <u>(Percent)</u> <sup>a/</sup>
<u>Region of Country</u>		
East	9	15
South	38	34
North Central	25	29
West	28	22
<u>Size of Community</u>		
Medium or large city	43	24
Suburb	29	25
Small city or town	23	35
Rural	6	16

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<sup>a/</sup> Percentages in each category may not sum to 100, due to rounding or missing responses.

FHA home buyer, is far more likely to be purchasing his or her first home (68 percent versus 42 percent) and more likely to be purchasing a lower-priced house. The average price of a non-FHA house was \$36,600, compared to an average price of \$28,012 for FHA-insured houses.

In addition, the homes purchased by FHA buyers tend to be somewhat older and are more likely to be in a large urban area than are the houses bought by persons using conventional financing. The only characteristic along which the two populations do not differ appreciably is education, where both populations tend to be relatively well educated. The differences between FHA and non-FHA homeowners confirm the importance of having stratified the samples to permit a separate analysis of the FHA population.

This report is organized around the separate analyses of the three sets of data collected and the integrated analysis of feasible HIW programs. Chapter II reviews the history, current status, and potential for growth of private HIW programs, as well as the current status of public programs.

Chapters III and IV contain the analyses of the data collected in the Demand and Needs Surveys, respectively. Chapter III assesses the potential demand for various HIW program options, with particular attention to the sensitivity of this demand to the price of the options.

tion of repair costs, but also analyzes the potential rates of claims and claims costs of alternative HIW program options.

Chapter V reports the methodology employed and the results of the analysis used to identify feasible alternative HIW programs.

Chapter VI provides a review of the overall findings of the study and a brief discussion of some of the policy issues which must be addressed in developing federal policy with regard to home inspections and warranties.

The main report is supplemented by nine appendices in Volume II. Appendix A contains estimates of the precision of statistical estimates based on the survey data contained in the main report. Appendix B profiles the major existing private HIW firms, and Appendix C provides background on the legal protection available to purchasers of previously owned homes. Appendices D through H provide supporting documentation and supplementary data to the main report, and Appendix I documents the data collection methodology.



## EXISTING HOME INSPECTION AND WARRANTY PROGRAMS

In order to assess properly the need for and feasibility of a Home Inspection and Warranty (HIW) program operated by the federal government, it was essential that a thorough review of existing programs providing such services be conducted. One key factor which was assessed in this review was the extent to which HIW protection is already available to the public in the private market. It was also important that accurate information on the costs of running such programs be assembled for use in the examination of possible HIW programs presented in Chapter V.

Information on existing HIW programs was obtained through interviews conducted in person and by telephone with representatives of the public and private firms in the industry, with officials responsible for similar public programs, and with real estate brokers.<sup>1/</sup> Section A of this chapter discusses the emergence of the relatively new private HIW industry offering protection to purchasers of previously occupied houses, describes the major firms now in existence, and discusses the potential for the industry for growth.<sup>2/</sup> Section B describes similar existing federal and municipal programs.

## PRIVATE HOME INSPECTION AND WARRANTY PROGRAMS

There is a newly emerging private HIW industry which offers various forms of protection to purchasers of previously occupied houses

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<sup>1/</sup> For a more detailed description of the programs, see the appendix.

home warranty firms have emerged to dominate the industry, although several new firms, which have recently entered the market, have characteristics of both types. One type, the service contract firm, generally warrants non-structural features of the house without a detailed inspection of them and then directly arranges for contractors to complete necessary repairs on warranted components. The second type, the inspection firm, provides a detailed inspection of the structural and mechanical components of the house and then offers an optional warranty covering those components that pass the inspection. Necessary repairs covered by the warranty are arranged either by the warranty firm or the homeowner.

Firms of the first type have expanded steadily in the past three or four years and now account for more than 90 percent of the home warranties on previously occupied homes currently in effect. Although one major inspection firm has been in business for some time, most firms in the second category have emerged only recently, and the growth of this sector of the market has been relatively slow. Overall, the HIW industry is still very small, providing protection to well under 5 percent of the previously occupied houses sold in the United States during the past year. Table II.1 contains a list of HIW companies currently operating, including all the major firms in the industry. The table also summarizes the principal features of each of the programs offered by these firms.

With one exception, all firms which have at any time played a major role in the industry are still in existence. This exception, the



## COMPARISON OF EXISTING PRIVATE WARRANTY PROGRAMS

Premium Cost For				Deductible Or Service Charge	Coverage <sup>b/</sup> Coverage <sup>c/</sup>	Period Of Coverage; Renewable <sup>c/</sup>	Inspection Level <sup>d/</sup>	Source Of Repair <sup>e/</sup>	Insurance Or Warranty <sup>f/</sup>	Principal Purchasers	Warranty Contracts In Effect (Annual Inspection)
000	\$70,000	\$150,000	House <sup>a/</sup>	House <sup>a/</sup>							
95	\$245	\$285		\$65- 135	BA BMS + central air and plumbing fix- tures BST + roof water penetration	1 yr.; NR	O-R	Owner	Warranty	Sellers	1,800
220- 240	\$220- 240	\$220- 240		\$20- 50	BA BMS + central air and/or plumbing fixtures in some locations	1 yr.; R	O-R	SC	Warranty	Sellers	30,000
180	\$210	\$275		\$250	BMS + central air BST + roof water penetration	1 yr.; R	D-Ins	Owner	Warranty	Buyers	60 (1,200)
195	\$215	\$285		\$100	BMS + central air, bathroom fixtures, kitchen sinks BST + roof water penetra- tion, attached garages	1 yr.; R	D-Ins	Owner	Warranty	Buyers	720 (2,700)
180 220 260	\$180 220 260	\$270 330 390		\$100 50 25	BA + slide-ins, counter-top blen- ders, central vacuum BMS + plumbing fix- tures, door bells, central air and built-in wall units, water softeners	1 yr.; NR	O-R	SC	Warranty	Sellers	16,000
217	\$293	\$527		\$100	BA BMS + central air, plumbing fixtures BST	1 yr.; NR	S-Ins	SC	Insurance	Sellers	1 (NA)

Program	Premium Cost For				Deductible Or Service Charge	Coverage <sup>b/</sup>	Period Of Coverage; <sup>c/</sup> Renewable	Inspection Level <sup>d/</sup>	Source Of Repair <sup>e/</sup>	Insurance Or Warranty <sup>f/</sup>	Principal Purchaser
	House	House	\$30,000	\$70,000							
Lead section anty ram	\$200	\$275	\$425	\$100	BMS + bathroom fixtures, laundry tubs BST + roof water penetration, attached garages and breeze-ways	2 yr.; R	D-Ins	Owner	Warranty	Buyers	
	\$210	\$210	\$210	\$15-20	BA + bathroom and kitchen fans BMS	1 yr.; R	O-R	SC	Warranty	Sellers	
c West	\$230	\$230	\$230	\$100 (cumulative)	BA + range, oven BMS + central air, plumbing fixtures, sump pump	1 yr.; NR	O-R	SC	Warranty	Sellers	
	\$100	\$140-210	\$300-450	\$25-50	Optional: BA, water softeners BMS + central air, bathroom fixtures BST	1 yr.; R	S-Ins	SC	Insurance	Buyers	
Paul section											
Home rance ram	\$200	\$270	\$430	\$100	BMS + central air BST + water penetration due to structural defects	2 yr.; NR	D-Ins	Owner	Insurance	Buyers	

<sup>a/</sup> The average price is listed for Rollins Home Care. See the text for an explanation of methods of determining premium costs.  
<sup>b/</sup> Basic appliance (BA) = built-in garbage disposal, dishwasher, range and oven. Basic mechanical systems (BMS) = central heating or electrical. Basic structural (BST) = roof, wall, ceiling and floor structure, foundations, basements.

<sup>c/</sup> R = renewable. NR = nonrenewable.

<sup>d/</sup> O-R = cursory inspection by owner or realtor. S-Ins = short inspection by independent inspector. D-Ins = detailed inspection by inspector.

<sup>e/</sup> SC = warranty firm provides a subcontractor. Owner = owner arranges repair and is reimbursed.

<sup>f/</sup> Insurance companies are currently subject to regulation by insurance commissions; warranty programs are not.

early 1970s. Within two years, the program had sold a considerable volume of warranties through approximately 200 real estate organizations nationwide, notably in California and Maryland. Rapidly rising repair costs and no provision for a deductible to reduce the flood of small claims eventually outstripped premiums (set at \$150 per warranty) and forced the program into bankruptcy. A number of individual brokers who had been marketing the Palace Guard program were left with the necessity of paying warranted repairs out of their pockets. This widely recognized failure has been a traumatic one for the industry.

### Prototype Firms

A framework for an examination of the HIW programs currently available in the private market is provided by discussing such details as coverage and costs in terms of prototype firms representing the two basic types of HIW programs.

a. Service Contract Firms. Service contract firms have been described as providing a "prepaid home service and maintenance contract" for certain nonstructural systems of the house.<sup>1/</sup> The four largest firms in this segment of the industry are American Home Shield (AHS), Electronic Warranty Associates (ERA), Pacific Cal-West (Cal-West), and Rollins Home Service. These firms (together with one inspection firm) have recently formed the National Home Warranty Association.

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<sup>1/</sup> Statement of David Smith, President of American Home Shield, State of California, Department of Insurance, Home Warranty Hearings, 01-05-1977.

and even across markets for the same company but, in general, includes built-in appliances and the major mechanical systems (e.g., heating, plumbing, and electrical). Coverage of the mechanical systems (though not of appliances in most cases) is available to the seller during the listing period. A one-year contract covering warranted components is then issued to the home buyer at the time of closing. Damages caused by external events such as floods and fires generally are not covered. To avoid trivial maintenance and repair complaints, these firms charge a service fee--often about \$20--for each visit of a repair person to the house.

Prices. Premium costs vary somewhat by firm and frequently vary by the selling price of the house. At the present time, the range of premiums for one year of warranty coverage runs from a low of \$180 (for a house selling for \$30,000) to a high of \$390 (for a house selling for \$150,000), with the average price being between \$200 and \$250.

Inspections. A detailed inspection is usually not a part of the service contract nor is it required as a precondition to issuing a warranty. To avoid unacceptably high rates of claims, some firms require real estate brokers to sell warranties on every house they list, thereby providing a mix of homes with regard to overall soundness of the relevant systems. Companies also maintain careful records on claims rates for warranties sold through individual real estate brokers, reserving the right to drop a broker with higher than average claims rates. In effect, this policy guarantees that at least a cursory inspection will be made by

working order. In the case of at least two warranty companies of this type, a cursory inspection by the real estate broker is explicitly a part of the process of preparing the contract. Some companies reserve the right to inspect any house and sometimes require inspections on high-risk older houses. Where inspections do take place, nonworking items can be repaired by the seller and included in the coverage or can be explicitly excluded.

Claims. Service contract companies generally subcontract with local repair firms to repair warranted systems. When a system covered by a warranty breaks down, the homeowner calls the warranty company, which arranges for a repair person to complete the repair within 36 to 48 hours. Approximately 60 to 70 percent of all warranties of this type involve at most one service call, and the average number of service calls is between one and 1.5 per warranty.

Representatives of these companies emphasize that a key requirement for their success is ensuring rapid and high quality service to homeowners when work on a warranted component is needed. These companies maintain tight, centralized control of this service process by having all repair problems called into one or two central offices, from which local repair subcontractors are then called. The warranty companies pay close attention to the quality of the completed repairs, either by spot checking with telephone calls to the homeowners or by asking the homeowners to return a postcard with comments on the quality of the service they have received. Repair firms are often dropped by the warranty companies

written by independent insurance carriers to protect warranty buyers in case the company is unable to honor claims. However, most companies put approximately \$90 to \$100 of the purchase price of each warranty into a reserve to be held against future claims costs.

Most of these firms have been reluctant to permit renewal of warranties after the initial one-year contract because homeowners are more likely to want to renew if they are experiencing or anticipating problems. In most cases where renewals are allowed, an inspection of the house is required.

b. Inspection Firms. The second major type of HIW firm offers two distinct products: a detailed inspection of and report on the condition of the home; and an optional one-year insurance policy or warranty contract on selected structural and mechanical systems which are determined to be in satisfactory condition during the inspection. A detailed inspection report describing the condition of the house is provided to the client (normally the prospective buyer) before the sale. In general, fewer than 30 percent of inspections result in the purchase of the warranty option.

The inspection firms have evolved largely in response to guidelines established by the National Association of Realtors (NAR).<sup>1/</sup> The two major firms in this segment of the industry are Certified Home Inspection

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<sup>1/</sup> A description of the NAR program is available in Home Protection Program: A Guide to Concept and Implementation, a booklet published by the NAR in Chicago in July 1975. The booklet outlines a number of conditions for NAR approval, including: a requirement that dwelling components be inspected prior to coverage; a minimum set of components

tered the field more recently are Homestead Inspection Warranty Program, Unhome Assurance Program, First American Home Protection, and Saint Paul Home Protection Program.

Coverage. Warranties offered by the inspection firms tend to cover mechanical systems (plumbing, heating, and electrical systems) and structural components (walls, ceilings, floors, roofs, and foundations) of the house. Problems such as wet basements, cosmetic repairs such as minor cracks in walls, and damage caused by external events are not covered. There is a deductible ranging from \$100 to \$250 on repair costs.

Prices. The fee for an inspection on this type of plan tends to vary with the price of the house. The warranty is sold separately for a flat fee. Generally, for a house selling for \$30,000, an inspection costs approximately \$120, and a one-year warranty option costs another \$75 to \$100. For a \$150,000 house, the inspection might cost \$185 to \$200.

Inspections. A careful two- to three-hour inspection is provided for all components of the dwelling unit. Not only are the components covered by the warranty inspected, but such additional features as appliances, septic systems, walks, patios, and yard drainage are generally also included. A detailed report is provided to the home buyer, outlining needed repairs and pending maintenance requirements.

Items found to be defective in the inspection report are excluded from coverage. Representatives of one major firm estimate that 25 percent of their inspection reports have no exclusions of components from warranty coverage, while 30 percent have two or more exclusions. (Approximately

contract firms is maintaining control over the repair process, control over the inspection process is crucial to the success of the inspection firms. Industry leaders repeatedly emphasize the importance of recruiting and training highly competent inspectors.

Claims. When a homeowner initiates a claim, the inspection firm determines whether the item is eligible for coverage and the cost of the necessary repair. If the claim is approved, either the firm or the homeowner then arranges to have the problem repaired. By comparison with the service contract firms, the claims rates experienced by the inspection firms are very low. On average, there are about .15 valid claims filed per warranty issued. This is the result not only of the inspections, but also of the generally higher deductible amounts and the exclusion of appliances from coverage. One company reports that there is some adverse selection in decisions to purchase the optional warranty protection since claims rates are now higher than they were two years ago when all inspected homes were required to carry the warranty.

Other Features. Since less than one-third of inspections result in warranty coverage, the two products tend to be financed independently. The major companies have underwriters to cover the warranty policies.

Inspection firms generally will reinspect and warrant homes for additional one-year terms.

## 2. Marketing Strategies

Both types of HIW programs contain features intended to benefit both of the parties to the typical real estate transaction-- the buyer, the



er, and the real estate agent. However, the different services offered by the two types of firms have differential appeals to the parties involved, and these, in turn result in quite different strategies for marketing the two types of programs.

Service Contract Firms. The warranty protection offered by the service contract type of firm provides the obvious benefit to the house buyer of a reduced risk of incurring a repair expense. However, it should be noted that the structural components of the house, where the average costs of repairs are largest (see Chapter IV) normally are not included.

There are several advantages to this type of HIW program for the seller. First, by purchasing such protection on a house being offered for sale, the seller may be better able to attract buyers; the marketing of a house "covered by a warranty" may be significantly easier than the marketing of noncovered houses. Second, to the extent that sellers are concerned about potential liability for defects found after the sale, a warranty may reduce this potential threat. In addition, the seller can generally obtain the direct benefits of warranty protection on the mechanical systems of the house during the listing period prior to sale.

The potential benefits from the perspective of the real estate agent are related to those of the seller. As the legal agent of the seller, and as a professional in the field of real estate, any potential threat of liability for defects in the house could also fall upon the real estate agent. While no such legal liability has yet been established, except in cases of the fraudulent hiding of known facts about a house, the existence of a warranty may be perceived as a reduction of this threat

Given these various potential benefits, service contract firms have developed marketing strategies which tend to focus on real estate agencies. The real estate agent, in turn, attempts to sell the warranty to the seller or buyer. Effectively, the real estate agent becomes the marketer of the warranty contract by directly providing the seller or (occasionally) the buyer with detailed information about the warranty, and by executing the contract.

Many service contract firms attempt to obtain agreements from real estate agencies to provide warranty coverage for all listings. Some firms require that participating real estate agencies at least offer their warranty to all sellers and buyers the agencies deal with. In most cases, the purchaser of the warranty is the seller of the house, although sometimes house buyers also purchase this type of warranty. On rare occasions, a real estate agent may pay for the warranty directly.

Inspection Firms. The principal service provided by inspection firms is the inspection itself. For a prospective buyer of a house, a detailed inspection report describing the condition of the house and identifying potential defects, if any, is a significant benefit. If no defects exist, the buyer can feel safer about the investment he or she is about to make; if a defect is uncovered, the buyer can take it into account in deciding whether to buy the house and what to offer.

On the other hand, from the point of view of the seller and the agent, a detailed inspection may be risky. A favorable inspection may

receive the bulk of their business through referrals from real estate agents, the real estate agent does not, in general, market the inspection or the warranty. The home buyer deals directly with the inspection firm. Therefore, although these companies allocate substantial shares of their marketing resources to informing real estate brokers and agents about their services, they do not, in general, enter into formal arrangements with the real estate agencies.

To counteract the resistance of sellers and agents to this form of coverage, inspection firms emphasize the positive value of full disclosure in terms of assuring satisfaction on the part of the buyer and, therefore, reducing the threat of seller or agent liability for defects. In addition, representatives of one inspection company stress the importance of adding a clause to the sales agreement, giving the seller the option to repair defects discovered through the inspection, instead of allowing the buyer to back out of the sale.

### 3. Potential Growth of the Industry

The small size of the industry, its newness, and the volatility of its growth to date make prediction of future growth potential difficult. Despite these limitations, however, an attempt has been made to forecast growth on the basis of two sources of information. First, past rates of growth, projections for growth during the coming year, and expectations

firms.<sup>1/</sup> Second, officers of real estate boards and real estate brokers in six states were consulted for their opinions about warranty protection and the industry's potential for growth in their areas. The initial discussion below is based on the assumption that there will be no significant change in the legal and regulatory environment within which the industry must operate.

Growth in Service Contract Firm Volume. There is likely to be rapid growth in the service contract segment of the industry within the next few years. This projection is based principally on the past growth experience of these companies. Major firms in this segment of the industry report rapid increases in rates of sales during the past year, with sales volume doubling in some cases. Furthermore, they anticipate similar high growth rates in the future. Not only is the industry continuing to grow at a significant pace in locations where it is already well established, such as northern California, it is also rapidly expanding to other locations, such as Florida, Texas, and Maryland. Conversations with real estate agents revealed wide awareness of warranty programs and a receptivity to them, although outside of California, agents expressed as much interest in the inspection firms approved by NAR as they did in the service contract industry.

The substantial market penetration which the industry has achieved in northern California, where it has had the longest experience provides additional evidence that the industry could become a significant force nationwide. Real estate brokers in Contra Costa County (near San Francisco

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existing homes within the county involve a warranty, and they estimate that this number may increase to 70 percent or more within the next two years.

It appears likely that not only will existing firms expand in the next few years, but that new firms will emerge, since there are no significant barriers to market entry. Although new firms face start-up costs in learning how to operate effectively in the industry, the existence of established programs makes it possible to bypass some of these learning costs simply by copying the price structures of other firms. Several representatives of existing firms reported that new companies were preparing to enter new markets ahead of them.

Growth in Inspection Firm Volume. While there seems to be substantial evidence that continued rapid growth can be expected in the service contract segment of the HIW industry, the available evidence with regard to the inspection firms is less clear. On the one hand, the growth of these firms has been slower to date than that of the service contract firms. However, two additional factors should be considered. First, the experience of the industry to date has been a relatively short one. In particular, the industry is only approximately four years old, and everyone involved acknowledges that mistakes were initially made with regard to pricing and operational aspects of the programs. Proponents of this type of warranty plan believe that these problems have been solved and that the industry is now ready for a period of sustained growth. Some support

ence of the inspection firms is that focusing principally upon major firms may be somewhat misleading. Given the small proportion of clients who purchase a warranty following the inspection, these companies, in effect, compete with substantial numbers of relatively small firms providing only inspection services. The recently formed American Society of Home Inspectors has some 80 members, and spot-checks of the yellow pages under "building inspections" for a number of cities suggest that inspection services are available in many urban areas.

Although the volume of inspections performed by either of the two major firms in the market is less than the warranty volume of any of the three largest service contract firms, half the real estate brokers and agents contacted during the research expressed an interest in inspection firms and, more specifically, in those firms approved by the NAR.<sup>1/</sup> Several of them had contacted one or more of these firms to encourage them to start operations in their area. For the most part, the firms had responded that they were not yet ready to expand their operations.

Extension of Coverage. Since structural defects in houses are not generally covered by service contract firms, representatives of several of these firms were asked during the research whether they would consider extending coverage to include structural defects without requiring a detailed inspection. Most industry leaders believed that

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<sup>1/</sup> Realtors in California were an exception to this, however.

ite expensive. Estimates of increases in cost over rates presently charged varied from \$100 to \$200 per policy, representing increases of 50 to 100 percent. Some industry leaders were skeptical that consumers would be willing to pay for the additional protection and believed that the possibility of adverse selection would require conducting thorough inspections. There is one company in the industry, however, that can be described as a service contract firm that does cover structural components. American Home Guard, a new entry into the industry, charges a premium that is competitive with rates charged by other service contract firms which do not cover structural components. The company has not been in operation long enough to judge whether its program will be successful.

Potential Impact of State Insurance Regulations. One major issue, which could seriously affect the potential growth of the HIW industry, is whether firms offering HIW programs should be subject to regulation by state insurance commissions. In most states, insurance commissions have either made no ruling or have, at least tentatively, ruled that the warranty companies are not in the insurance business. However, there have recently been discussions of the possibility of reversing these tentative decisions in some states, including California.

Many industry representatives claim that such regulation would substantially affect the ability of the HIW industry to grow. They believe that insurance statutes would make it difficult for them to operate, and they cite four key problems with such regulation. First, the minimum levels of unencumbered assets that must be set aside are prohibi-

in response to market conditions. Finally, some states do not allow an insuring organization to withdraw from a state until several years after its program is terminated. Since the typical warranty contract lasts only one year, maintaining a presence two years past the expiration of the final contract is viewed by HIW firms as unnecessary.

On the other hand, three HIW firms<sup>1/</sup> are currently operating under the jurisdiction of state insurance commissions. Representatives of these companies believe that the benefits of regulation in creating consumer confidence in the stability and reliability of their operations outweigh the disadvantages. At the present time, it is impossible to be certain what effect insurance regulation would ultimately have on the growth potential of the industry.

## B. PUBLIC PROGRAMS

In a description of the current range and availability of protection against unanticipated repair expenses, it is important to consider the public as well as the private programs that are available. Under Section 518 of the National Housing Act, the federal government reimburses eligible holders of FHA mortgages for repairing certain types of home defects. This program is described in Section 1. Section 2 then discusses a number of municipal presale inspection programs under which homes must be inspected for housing code violations before they are sold.

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<sup>1/</sup>These companies, Soundhome Assurance Program, Saint Paul Home Protection, and First American Home Protection Insurance, have all started



which so seriously affect use and liveability as to create a serious danger to the life or safety of inhabitants of any one, two, three or four family dwelling which is covered by a mortgage insured under section 235 of this Act or which is located in an older, declining urban area and is covered by a mortgage insured under section 203 or 221 . . . and which is more than one year old on the date of issuance of the insurance commitment . . . [if] the defect is one that existed on the date of the issuance of the insurance commitment and is one that a proper inspection could reasonably be expected to disclose.

Under Section 518(b), this coverage was available to homeowners with mortgages insured between August 1968 and January 1973. Eligibility was extended to August 1976 under Section 518(d).

An owner of an FHA-insured home eligible for coverage under the Section 518(b) (d) program initiates a claim by filing with an FHA field office. When claims are received, initial determinations are made concerning their statutory eligibility under the act, with regard to such factors as the date on which mortgage insurance was issued and the location of the property.<sup>1/</sup> After a claim passes this initial screen, FHA staff members are sent to the house to determine if the defect existed at the time of the sale and if it could have been detected during the original inspection. Homeowners with valid claims are then reimbursed for their repair costs. If a claim is denied, the homeowner can resubmit it for review.

A number of problems have been encountered with the Section 518 program. The program, begun in 1975, requires processing many retrospective claims on home defects which were repaired before the program was implemented.

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<sup>1/</sup> "Older declining urban areas" have been operationally defined to be urban census tracts or neighborhoods in which more than half the dwelling

of sale, as claimed, and whether it would have been eligible for coverage. Furthermore, even in cases where a defect has not yet been repaired, it is hard to tell whether or not it should have been identified during an inspection which may have occurred months or even years earlier. In addition, since FHA staff members who perform appraisals and inspections must determine the validity of a claim under the 518 program, the program is structured so that individuals are asked to certify that they or their colleagues erred during earlier appraisal inspections.<sup>1/</sup>

Almost all claims filed under Section 518(b) have been processed. Substantial numbers of claims under Section 518(d), however, are currently being received by FHA area offices. For the two programs taken together, there had been approximately 85,000 claims filed by March 1977, of which about 15500 or 18 percent had been determined to be valid.

Contrast with Private Programs. While the Section 518(b) (d) program serves a purpose similar to that of the private warranty programs, its coverage is quite different. Coverage under Section 518 is limited to defects which so affect the home "as to create a serious danger to the life or safety of inhabitants."<sup>2/</sup> In addition, the program is applicable primarily to homes in older, declining urban areas. Private warranty

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<sup>1/</sup> It should be noted that the initial FHA appraisal inspection is designed primarily to obtain an appraisal of the current market value of the house. The field staff are trained appraisers, not building construction inspectors. Therefore, the "inspection" provided is not designed to be at the same level as that obtained by the HIW inspection firms.

<sup>2/</sup> This statutory definition may, of course, be interpreted with

terms of specific components of the house. Furthermore, while the private programs are self-financing, under Section 518 owners are partially subsidized for repairs, since payments for repairs are made from the FHA insurance fund, which is partially supported by general tax revenues.

### Municipal Presale Home Inspection Programs

Over the last ten years, several municipalities have adopted programs that require inspection of all residential dwelling units before they are sold.<sup>1/</sup> Some of the principal characteristics of these public programs are summarized in Table II.2.

Purposes. The purposes of the municipal presale inspection programs are quite different from those of the private HIW programs. Whereas the private programs are structured to provide benefits for one or more of the three principal participants in a real estate transaction, the public programs focus on the communitywide goal of improving the quality of residential areas. These programs provide a method for administering the local housing code and are designed to discourage or reverse the deterioration of neighborhoods. In some locations, these programs are also intended to protect the inexperienced home buyer from purchasing an unsound dwelling.

Coverage. In all locations with mandatory inspection programs, some variation of the Building Officials and Code Administrators (BOCA) Basic Building Code serves as the framework for the inspection. The inspection covers mechanical systems and basic structural components of

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<sup>1/</sup> These municipalities include Cincinnati, Ohio; Detroit, Michigan;

TABLE II.2

## PRESALE MUNICIPAL INSPECTION PROGRAMS

	Starting Date	Inspection Fee	Percent With Violations, First Inspection	Approximate Annual Volume
Detroit, Michigan	June 1976	\$92 <sup>a/</sup>	92	16,000 <sup>d/</sup>
Flint, Michigan	October 1972	\$36	96	3,900
Minneapolis, Minnesota	December 1975	\$50-\$65 <sup>b/</sup>	N.A. <sup>c/</sup>	N.A. <sup>c/</sup>
Wilmington, Delaware	October 1976	\$0	40	3,000 <sup>d/</sup>
University City, Missouri	1967	\$15	97.5	2,000

<sup>a/</sup> Includes average cost of follow-up inspections.

<sup>b/</sup> Sellers hire private contractors to perform inspections.

<sup>c/</sup> N.A. = not available.

<sup>d/</sup> Estimated; exact figure not available.

systems must be operable and must meet certain safety standards. The electrical system, for example, must have adequate outlets, amperage, and lighting fixtures, and no loose or hanging wires may be present. The inspection of the structural components includes the roof, wall structure, ceilings, floors, foundation, and basements.

In addition to basic structural and mechanical elements, municipal inspectors look for defects judged to affect the health or safety of the occupants. These defects include violations of space requirements, such as minimum ceiling height and room size, and violations of minimum standards for ventilation, light, and availability of exits. Such considerations are outside the scope of current warranty programs.

Prices. Homeowners selling dwellings in locations with municipal resale inspection programs pay a fee for the inspection service. In general, these fees are lower than those charged by private inspection firms. In University City, Missouri, the home seller pays \$15.00 for an inspection with the city paying an average additional cost of \$32.00 per unit. In Detroit, Michigan, the fee is as high as \$92.00. One city, Wilmington, Delaware, does not charge an inspection fee.

## SUMMARY

A number of forms of protection against unexpected home repairs are currently available to buyers of existing homes. In the private market, two different types of warranty firms with quite distinct types of coverage have evolved. In areas of the country where both types of programs are available, therefore, buyers of existing homes have a considerable choice

rapid growth in the coming years. In addition, the recent entry into the market of several new HIW companies offering programs somewhat different from those of the major firms suggest that both the range and availability of HIW protection in the private market may increase with time. Detailed presale inspection services unaccompanied by warranties are also quite widely available in the private market at relatively low cost.

Protection against expenses associated with unexpected repairs has also been provided for some buyers of existing homes by the public sector. In particular, Section 518 of the National Housing Act reimburses eligible holders of FHA mortgages for certain home repair costs. However, this coverage has so far extended only to homes purchased up to August, 1976 and for most FHA-insured mortgages Section 518 coverage is limited to homes in older declining urban neighborhoods--a minority of all FHA-insured homes.

Several cities have enacted pre-sale inspection programs which provide partial protection against unanticipated repairs by identifying defects involving violations of local housing codes. However, these programs do not provide protection against expenses associated with defects which are not found at the time of the inspections. In addition, they are limited to only a few municipalities.

depending on such factors as geographic location, type of mortgage, and type of house. However, private suppliers of HIW services appear to be growing very rapidly, and it is quite likely that HIW protection will become much more widely available in the private market within a few years.





A complete evaluation of HIW policy options requires an assessment of whether home purchasers are willing to pay the premiums necessary to cover the costs of alternative programs. The Demand Survey, therefore, was designed to answer two basic questions concerning HIW programs:

1. How would home buyers respond to certain specific HIW program options?
2. How do consumers feel about specific features of these options?

Answers to the first question provide information concerning the overall market for specific HIW programs and contribute to the development of demand estimates. Answers to the second question make it possible to evaluate possible program options which are not included within the relatively small set of specific options tested in the interviews.

These questions were answered by conducting a national telephone survey of two groups of recent home buyers: 911 owners of one- to four-family houses with FHA-insured mortgages who bought their houses around November and December 1976; and 908 homeowners of one- to four-family houses without FHA-insured mortgages who bought their houses around January 1977.<sup>1/</sup> In the evaluation of the survey results, it

segments of the total population of home buyers. Compared to the non-FHA owners, the FHA owners are younger, are more likely to be first-time home buyers, have lower average incomes, buy less expensive homes, and are relatively concentrated in urban areas.<sup>1/</sup>

The analysis of the Demand Survey is presented below. Section A examines the reactions of recent home buyers to five alternative HIW program options. Sensitivity to price changes, the extent of latent demand, and the degree to which demand is concentrated among certain types of households are examined. Section B examines interest in purchasing only an inspection. Section C analyzes consumer attitudes toward specific features of the HIW options, such as type and length of coverage and the payment mechanism. Section D examines the impacts of predisposing attitudes toward inspections and recent experience with problems on the demand for alternative HIW options.

#### A. REACTIONS TO FIVE INSPECTION-WARRANTY OPTIONS

##### 1. Features of the Five Tested Options

Five alternative HIW program options were tested in the Demand Survey. These options are best described by the actual wording of the descriptions that were read to respondents:

1. Option S (Structure) "provides a one-year warranty with \$100 deductible. It covers costs for necessary repairs for the main structure of the house--the foundation, load-bearing walls, floors and ceiling, and the roof if these items pass inspection. Costs over \$100 are covered for each claim during the first

year you own the house. This plan does not include a detailed inspection report." (This option was coded "Plan M" in the interview.)

2. Option SM-1 (Structure and Mechanical Systems--One year) "provides an inspection report and a one-year warranty with \$100 deductible. It is based on a detailed inspection of the main structure of both the house and major equipment--the foundation, load-bearing walls, floors and ceiling, roof, plumbing, heating and central air conditioning, and electrical system. You get a detailed inspection report before you make your final offer. The warranty covers the cost of fixing problems not identified by the inspection, if they occur during the first year you own the house--less \$100 for each claim. Problems identified in the inspection report are not covered by the warranty." (This option was coded "Plan Q" in the interview.)
3. Option SM-2: Same as SM-1, except that it has a two-year coverage period.
4. Option SMA (Structure, Mechanical Systems, Appliances) "provides an inspection report and a one-year warranty with \$100 deductible. It is based on a detailed inspection of the main structure of the house, major equipment, and major appliances--the foundation, load-bearing walls, floors and ceiling, roof, plumbing, heating and central air conditioning, range, oven, dishwasher, refrigerator and freezer, septic system, and wet basements. You get a detailed inspection report before you make your final offer. The warranty covers the cost of fixing problems not identified by the inspection, if they occur during the first year you own the house less \$100 for each claim." (This option was called "Plan J" in the interview.)
5. Option MA (Mechanical Systems and Appliances) "is a repair service for plumbing, heating and central air conditioning, electrical system, and major appliances such as range, dishwasher, and refrigerator. It does not include an inspection, but the warranty covers these items. Repair costs for parts and labor over \$50 are covered during the first year you own the house. If any repairs are necessary, you call the firm you bought the warranty from and they send someone to fix it." (This option was called "Plan F" in the interview.)

Demand for each of these five options was examined at three different price levels. Options MA and SM-1 are similar to programs cur-

available on the private market, it was necessary to estimate price ranges on the basis of how their coverages related to those of Options MA and SM-1.

Demand estimates for the five options at these prices were obtained by using a five-point verbal, monadic rating scale that asked for the likelihood of buying each plan.<sup>2/</sup> The proportion who selected the extreme positive scale position on buying intentions provided a good estimate of market share.<sup>3/</sup> Therefore, the proportion of respondents who rated themselves "absolutely certain" to buy each option was treated as an estimate of the proportion of recent home buyers who would have bought that option at the stated price, assuming it were universally and uniformly available. To the extent that an option was not known and available to all home buyers, its share of course be diminished. Demand scores based on these responses are

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<sup>1/</sup>A form of Option SM-2, which corresponds to the plan specifically mentioned in the Congressional mandate for this study, is also now available from a private firm but only on a limited basis.

<sup>2/</sup>Monadic rating scales ask respondents to rate each item one at a time, independently and without consideration of other items to be rated. Since they do not depend on the number and mix of items being tested, monadic scales are the appropriate method for this study, in that the five options that were tested do not represent all the possibilities that could actually become available to home buyers.

<sup>3/</sup>See Jan Stapol, "Predictive Attitudes," in Attitude Research on the Rocks, edited by L. Adler and I. Crespi, Chicago: American Marketing Association, 1968. It should be emphasized that prediction of behavior based on monadic ratings are macroestimates only. The prediction of individual buying behavior is subject to appreciable error. However, the rate (or incidence) of buying in the total population can be estimated by using the procedures described here.

ferred to as active demand.

#### Demand for HIW Program

Active demand scores for all options over their respective price ranges (see Table III.1) tend to be quite low. Except at the lowest prices tested, active demand is in all cases less than 10 percent, and even at the lower prices, it is never higher than 20 percent.

It is noteworthy that differences between FHA and non-FHA owners in their demand for each option are not statistically significant,<sup>1/</sup> despite the substantial differences between the two samples regarding such characteristics as annual family income, price paid for the house, and age of the house. This is the case for all five options regardless of the scope of coverage, price, kind of service provided, and length of coverage.

Because versions of Options SM-1 and MA are now on the market, their active demand scores at the midprice can be compared with the actual market performance of these marketed programs, as analyzed in chapter II. In contrast with the significantly larger active demand score for Option SM-1, the marketed version of Option MA has been the more successful of the two. However, this greater success may stem from the fact that Option SM-1 has been marketed primarily to home buyers, while Option MA has been marketed primarily to sellers through real estate brokers.

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<sup>1/</sup> Throughout this chapter, statistical significance was tested by

## ACTIVE DEMAND FOR FIVE INSPECTION-WARRANTY

## PLANS AT ALTERNATIVE PRICES

	<u>Absolutely Certain to Buy</u>	
	FHA %	Non-FHA %
Option S		
\$100	7	6
\$ 75	9	8
\$ 50	20	20
Option SM-1		
\$200	1	2
\$175	7	5
\$100	18	18
Option SM-2 <sup>b/</sup>		
\$375	1	2
\$260	7	8
\$150	19	19
Option SMA		
\$350	1	3
\$275	5	6
\$200	9	10
Option MA		
\$250	*a/	1
\$200	2	2

the effect of price variations upon buying interest is of central concern in analyzing the demand for inspection-warranty plans. If demand is price sensitive, it becomes extremely important to identify prices (if they exist) at which costs are covered and demand is sufficiently high to meet program objectives. On the other hand, if demand changes little in response to price but varies appreciably by scope of coverage, the issue becomes one of identifying the kind of coverage that is needed and wanted. Price sensitivity was measured by using an interviewing strategy designed to estimate the demand for each option at prices higher and lower than an initial approximate market price. All respondents who expressed a likelihood of buying an option at that initial price were asked about their buying interest at a higher price, while the unlikely buyers at the initial price were asked about their buying interest at a lower price.

Cutting the initial price by about one-third increased active demand scores for all five plans by a factor of about two or more (see Table III.1). At the lower prices, a clear-cut division in demand existed, with Options S, SM-2, and SM-1 having scores in the 18 to 20 percent range, and Options SMA and MA scoring 9 to 10 percent and 6 to 7 percent, respectively.

Increasing prices from their initial levels by about one-third sharply reduced active demand, almost to the vanishing point, except for Option S (see Table III.1). Option S maintained most of its initial demand, so at its high price it received the highest preference rating from 7 percent of the FHA sample and 6 percent of the non-FHA sample. Active demand scores for the other four plans were at 1 percent or less

particularly noteworthy with respect to Options S, SM-1 and SM-2, with active demand reaching nearly 20 percent for these three options after a price reduction was offered.

#### 4. Demand at Estimated "Breakeven" Prices

Comparisons of the relative rankings of the five plans at the tested "high," "medium," and "low" prices for each is problematic for two reasons:

- (1) the price ranges are not the same;
- (2) the price ranges are only approximations of realistic ranges for the plans.

The breakeven prices for the five plans, as determined in the feasibility analysis in Chapter V provide more appropriate prices at which to make such comparisons.<sup>1/</sup>

At these prices, Option SM-2 had the largest active demand score in both the FHA and non-FHA samples--about 11 to 12 percent. (see Table III.2) Option S had the lowest demand at breakeven prices--approximately 3 percent--while the demands for Options SM-1, SMA, and MA ranged from 4 to 9 percent,

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<sup>1/</sup> Since the breakeven prices do not correspond directly to those tested in the survey, demand at these prices had to be estimated from the survey data. The linear interpolation method used in doing this is described in Appendix F. The breakeven prices used were those for voluntary programs available to both sectors.



## DEMAND FOR FIVE

## OPTIONS AT BREAKEVEN PRICES

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	FHA %	Non-FHA %
Option S @ \$140	3	3
Option SM-1 @ \$195	6	4
Option SM-2 @ \$225 <sup>a/</sup>	12	11
Option SMA @ \$250	7	8
Option MA @ \$145	9	6

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<sup>a/</sup> Price is for two years of coverage.

for HIW plans with one year of coverage is small and about equal among both FHA and non-FHA home buyers, regardless of coverage differences. Extending coverage to two years would appear to increase demand at breakeven prices, by a factor between two and three. Even so, however, only about one in eight home buyers can be considered likely HIW buyers under a voluntary two-year program at breakeven prices.

#### 5. Latent Demand for the Five Options

As noted above, the active demand scores were based upon the proportion of all respondents who rated themselves "absolutely certain" to buy an option at a given price. However, those who rated themselves as "very likely" to buy an option had also indicated a strong interest in it, although it would be unrealistic to project effective market demand for such respondents.<sup>1/</sup> Nonetheless, these "very likely" responses do provide supplementary information about the potential or latent demand for each plan as home buyers gain more knowledge of and experience with inspections and warranties. For this reason, the likelihood of buying has been analyzed by using an additional score, "latent demand," defined as the proportion of respondents who rated themselves either "absolutely" or "very likely" to buy a plan.<sup>2/</sup> This section analyzes the

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<sup>1/</sup> See Jan Stapol, "Predictive Attitudes."

<sup>2/</sup> Latent demand scores can also be treated as indicators of the effect that an aggressive marketing campaign might have on active demand for each option. The low active demand scores analyzed in the earlier sections of this chapter reflect in large part the limited awareness of, and experience with, inspections and warranties (see below, Section D). Up to the present

About half of both the FHA and non-FHA samples expressed at least latent interest in Options S, SM-1 and SM-2 at their low prices (see Table III.3). In contrast, only about one-fourth expressed at least a latent interest in Options SMA or MA at their low prices. Since the latter two options differ from the others in that they cover appliances, this suggests that appliance coverage may have limited appeal to both FHA and non-FHA home buyers.

The breakeven price is appreciably higher than the tested low price for all options except MA. To adjust for this, latent demand scores at breakeven prices have been estimated (see Table III.4) by using the same procedure as for the active demand scores. The results of this analysis parallel in large part the interpolated active demand scores at breakeven prices analyzed in the previous section. In both instances, Option SM-2 emerges as the plan with the greatest appeal, with latent demand scores about 36 percent in both samples. Options SM-1, SMA, and MA follow in the range of 19 to 22 percent, while Option S trails with scores of 11 and 17 percent in the two samples.

Thus, at breakeven prices, Option S has an active demand somewhat smaller than that of Options SM-1, SMA, and MA, but its growth potential in the FHA market is almost the same. The growth potential in the non-FHA market is, however, appreciably smaller. On the other hand, the two-year period of coverage offered by Option SM-2 generates more latent interest. Nonetheless, on a voluntary basis, and at a breakeven price, even Option SM-2 still attracts the interest of little more than one-third of the potential market.

INSPECTION-WARRANTY PLANS AT ALTERNATIVE PRICES

	<u>"Absolutely Certain" to Buy</u>		<u>"Absolutely Certain" to Buy or "Very Likely" to Buy</u>	
	FHA %	Non-FHA %	FHA %	Non-FHA %
Option S				
\$100	7	6	21	20
\$ 75	9	8	32	26
\$ 50	20	20	49	45
Option SM-1				
\$250	1	2	8	9
\$175	7	5	26	24
\$100	18	18	50	45
Option SM-2 <sup>b/</sup>				
\$375	1	2	7	8
\$260	7	8	28	29
\$150	19	19	56	52
Option SMA				
\$350	1	3	6	6
\$275	5	6	20	20
\$200	9	10	28	27
Option MA				
\$250	* <u>a/</u>	1	5	4
\$200	2	2	12	10

TABLE III.4

## LATENT DEMAND FOR FIVE OPTIONS AT BREAK-EVEN PRICES

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	FHA %	Non-FHA %
Option S @ \$140	17	11
Option SM-1 @ \$195	21	20
Option SM-2 @ \$225 <sup>a/</sup>	37	36
Option SMA @ \$250	22	22
Option MA @ \$145	21	19

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<sup>a/</sup>Price is for two years of coverage.

Demand for the five options tends to be concentrated among the same people, rather than each option attracting a different market segment. As shown in Table III.5, 62 percent of both the FHA and non-FHA samples never rated themselves as "absolutely certain" to buy any of the options at the tested low price for each. On the other hand, in both samples, a total of 20 percent expressed an active demand for two or more options. In other words, the large majority of recent home buyers rejected all the options offered to them at the initial prices, while a small minority expressed a readiness to buy a number of the options. This indicates that there is a tendency to react to the basic concept of HIW plans on an all-or-nothing basis, rather than to react selectively to each.

#### 7. Variations in Demand Across Different Market Segments

Tabulations of demand rates for different categories of home purchasers classified by such characteristics as income, age of house, and house price revealed no statistically significant differences in demand between different groups of home buyers.<sup>1/</sup> This is an important finding because it suggests that adverse selection caused by households that may have relatively high risks of repairs, such as homeowners with older or lower priced homes, and having relatively high demand for HIW protection would probably not be a significant factor in a public HIW program. Adverse selection would, if it existed, be a serious problem in developing a voluntary HIW program because the relatively high claims rates which would result among program participants would push program

NUMBER OF OPTIONS WHICH RECEIVED "ABSOLUTELY CERTAIN"

RATINGS AT THEIR LOWEST TESTED PRICES

	FHA Sample	Non-FHA Sample
	62%	62%
Option	14	14
Options	9	9
e Options	6	6
Options	3	4
Options	2	1
ecided on One or re Options	4	4
Total	100%	100%

across all home purchasers. While it is not possible to measure adverse selection fully in a single set of cross-section surveys, such as the ones conducted for the present study,<sup>1/</sup> the fact that demand was not correlated with any of the observed home buyer characteristics provided at least partial evidence that adverse selection caused by demand differences among households with different market characteristics may not be an important problem. It appears that the determinants of demand for HIW protection are quite uniformly distributed across different categories of home purchasers.

#### B. INTEREST IN PURCHASING A DETAILED INSPECTION

The home warranty programs examined in Section A represent variation in a warranty approach which the home purchaser can follow to reduce risk of unexpected home repair bills. An alternative way of meeting this objective is to purchase a detailed inspection of the home without an accompanying warranty. Demand Survey respondents were asked about their willingness to buy a detailed inspection costing \$80 to \$120 with a warranty, and this makes it possible to assess buyer attitudes toward this second approach.

Thirteen percent of the FHA sample and 11 percent of the non-FHA sample rated themselves "absolutely certain" to purchase inspection services within the \$80 to \$120 price range (see Table III.6).<sup>2/</sup> These

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<sup>1/</sup>See Chapter VI, Section B.4 for a fuller discussion of the inferences to which inferences about adverse selection can be made from the available survey data. It should be noted that the discussion in this section concerns only one form of adverse selection. The possibility of another



LIKELIHOOD OF BUYING A DETAILED INSPECTION COSTING \$80 to \$120

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	FHA Sample	Non-FHA Sample
Very certain	13	11
Certainly	17	15
Probably	27	27
Probably not	21	19
Unlikely	21	27
Very unlikely	1	1
Total	100%	100%

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types of warranty plans. As was the case with the warranty plans, therefore, a significant number of home purchasers could be expected to purchase inspection services, but it is unlikely that an inspection-only plan provided on a voluntary basis would be purchased by the majority of home purchasers in either the FHA or non-FHA segments of the market.<sup>1/</sup> The majority of home buyers, apparently, do not consider such services sufficiently valuable given the risks to justify their cost.

Use of the measure of latent demand developed in Section A increases the estimated proportion of home buyers who would purchase inspections to 31 percent of the FHA sample and 26 percent of the non-FHA sample. Although this latent demand is similar to that for Options S, SM-1, and SMA, it is significantly lower than that for SM-2.

#### C. ATTITUDES TOWARD SPECIFIC HIW PROGRAM COMPONENTS

Further insight into the preferences of home buyers with regard to HIW protection can be gained by examining their attitudes toward specific features of alternative HIW plans, such as length of coverage, type of coverage, and the deductible amount. As discussed in the sections below, the results of this analysis serve largely to reinforce the conclu-

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an inspection-only program is roughly comparable to but slightly higher than the share of Demand Survey respondents who reported actually having purchased an inspection prior to buying a house (see Section D.1). The fact that the demand estimate is slightly higher may reflect a growth potential that the limited current availability of inspections has not yet tapped.

<sup>1/</sup>Supplementary data is provided in Appendix D, Table D.11.

is reached in the analysis of the demand for program options.

The results for the FHA and non-FHA samples are summarized in Table III.7. Supplementary tables detailing preferences for each of the component features examined by market segments within the two samples are presented in Appendix D, Tables D.12 to D.16.

#### Length of Coverage

When asked their preference for a one-, two-, or three-year period of warranty coverage, 63 percent of the FHA sample and 58 percent of the non-FHA sample opted for the three-year period (see Table III.7). Coverage for two years was preferred by 21 percent of the FHA sample and 30 percent of the non-FHA sample. Only 16 percent of the FHA owners and 10 percent of non-FHA owners preferred coverage limited to the first year of ownership. This pattern of response existed in all market segments. This widespread demand for long-term warranty protection against unanticipated repair costs is consistent with the fact that among the five options examined in Section A, the only option with a multi-year duration--SM-2--had the largest active and latent demands at the surveyed price levels.

#### Type of Coverage

Respondents were asked to rank three types of warranty plans: one that covered only the main structure of the house (foundation, walls, floors, and roof); one that covered major mechanical systems (plumbing, heating, and electrical); and one that covered major appliances (range,

## Preferred Period of Coverage

One Year	16%	22%
Two Years	21	30
Three Years	63	58

First Choice Regarding Scope  
of Coverage

Main Structure	45%	55%
Mechanical Systems	49	41
Major Appliances	3	4

## Deductible Feature

Plan costs more to buy, with \$50 deductible	76%	66%
Plan costs less to buy, with \$200 deductible	24	34

## Payment Schedule

Lump Sum	36%	43%
Quarterly	30	29
Monthly	32	24

## How Repair Service is Provided

Arrange for Repairs Oneself	65%	75%
Warranty Firm Sends Repairman	35	25

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y a handful in either sample naming major appliances (see Table III.7).  
the FHA sample, 49 percent named mechanical systems coverage as their  
st choice, 45 percent named the main structure, and 3 percent named  
or appliances. The non-FHA sample differed only slightly, with 55  
cent naming main structure as their first choice, 41 percent naming  
mechanical systems, and 4 percent naming major appliances. These data  
not be interpreted to mean that there is no interest in warranty  
verage for major appliances--rather, they suggest that whatever  
erest there may be in such coverage is very weak relative to  
rranty coverage for main structures and mechanical systems.<sup>1/</sup> The two  
ter coverages clearly have priority. It should also be noted that there  
a split in preferences between structure and mechanical systems re-  
ding first and second choices, which suggests that many respondents  
d difficulty in choosing between the two.

#### Deductible Amount

The dominant concern of respondents appears to be avoiding the  
financial burden of all but very minor repairs, even if this entails  
greater cost. Seventy-six percent of the FHA sample and 66 percent  
the non-FHA sample preferred a more expensive warranty with \$50  
eductible to a less expensive plan with \$200 deductible (see Table III.7).  
both samples, respondents with higher incomes and those who paid more

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the smaller deductible.

In most market segments, FHA mortgage owners were more likely than non-FHA owners to prefer the smaller deductible. This difference between the two samples suggests that FHA mortgage owners are more likely to be concerned about their ability to assume unanticipated repair costs of relatively small size.

In interpreting these results, one should remember that the actual costs associated with a \$50 or \$200 deductible were not specified in the question. If a price tag were put on these deductibles, it is quite possible that preferences would change. What is clear is that there is considerable sensitivity to the burden of unexpected repair costs, so that a large deductible would lessen the value of a warranty to a home buyer. Increasing the size of deductibles in order to reduce the cost of a warranty, therefore, would not necessarily increase demand.

#### 4. Schedule of Payments

Expressed preferences for lump sum, quarterly, or monthly payments were divided rather evenly, although there was some tendency--especially in the non-FHA sample--for lump sum payments to be preferred (see Table III.7). Given this even division of preference, no one schedule of payments is likely to prove completely satisfactory to a majority of FHA or non-FHA owners.

Preference for lump sum payments was positively associated with upper socioeconomic status. At the higher income levels, about half or more of both the FHA and non-FHA samples preferred lump sum payments

packet preferred lump sum payments. This suggests that financial constraints would limit the purchase of an HIW plan, unless a program of time payments were available.

#### . Arranging for Repairs

Dealing directly with contractors for repairs rather than relying upon the warranty firm to send a repairman was the preference of 65 percent of the FHA sample and 75 percent of the non-FHA sample (see Table II.7). This pattern of preference was found in all market segments and in both samples. Relying upon a repair service to fulfill a warranty had limited appeal.

#### . PRIOR AWARENESS OF AND EXPERIENCE WITH INSPECTIONS AND WARRANTIES

Prior awareness of and experience with inspections and warranties can be an important influence on the demand for any inspection-warranty plan. Consequently, the reaction to the HIW plans among respondents who were previously unaware of the availability of warranties might be expected to be tentative and cautious, as compared to respondents already familiar with them. This issue is addressed below.

#### . Inspection

Most home buyers have little knowledge or experience with inspections to draw upon when assessing how applicable an inspection might be to their own needs. Claimed awareness<sup>1/</sup> of inspections was limited in

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heard of firms that specialized in inspections (see Table III.8).

Another 22 percent of the FHA sample and 27 percent of the non-FHA sample reported that they had heard of such firms but had never hired anyone for a presale inspection. Only 8 percent of the total FHA sample (or one-fourth of all those aware) and 13 percent of the total non-FHA sample (or one-third of all those aware) reported that they had at some time hired someone for this purpose. In both the FHA and non-FHA samples, respondents with higher annual incomes, those who paid more for their homes, and those who had purchased several homes were more likely than others to have had knowledge of and experience with inspections.

## 2. Warranties

In both the FHA and non-FHA samples, awareness of and experience with warranties is even more limited than is the case with inspections. Warranties were for most respondents a totally new concept to which they were reacting for the first time. Overall, only 26 percent of the non-FHA sample and 21 percent of the FHA sample reported that they had heard of warranties on the condition of mechanical systems and structure of the house.<sup>1/</sup> The proportion who claimed they had actually bought

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for them to be unable to demonstrate actually having heard of it. This may be due to confusion or to a desire to give the reply to a question which is perceived to be socially desirable. The actual proportion of such people varies from situation to situation, but usually is less than 10 to 15 percent. No questions were asked to determine the extent of knowledge or awareness, so that some proportion of "aware" respondents are in all likelihood uninformed.



PROPORTION IN EACH MARKET SEGMENT WITH PRIOR

AWARENESS OF AND EXPERIENCE WITH INSPECTIONS

	FHA Sample			Non-FHA Sample		
	Aware Only	Exp. Only	Total	Aware Only	Exp. Only	Total
Sample	22%	8%	30%	27%	13%	40%
Price Range						
21,000 or Less	16%	7%	23%	29%	5%	34%
21,001 - 28,000	20	9	29	26	10	36
28,001 - 35,000	26	9	35	23	13	36
35,001 or More	27	10	37	26	21	47
Annual Family Income						
12,000 or Less	18%	5%	23%	26%	7%	33%
12,001 - 16,000	22	6	28	27	8	35
16,001 - 21,000	21	14	35	26	15	41
21,001 or More	30	11	41	29	26	55
Number of Prior Homes Owned						
One	22%	8%	30%	25%	10%	35%
Two	18	10	28	24	19	43
Two or More	27	10	37	31	17	48

There was some tendency in the Demand Survey for respondents who had had previous experience with inspections to indicate more interest than other respondents in purchasing specific HIW plans. For instance, 9 percent of FHA respondents with previous experience expressed an active demand for SM-2 at the medium price, as compared to 6 percent of the respondents with no previous awareness of or experience with inspections. The comparable difference with regard to latent demand is even greater. While there are some exceptions to this pattern, in general the tendency for both active and latent demand to increase with past inspection or warranty experience can be observed for other options, for other prices, and for the non-FHA sample as a whole (see Appendix D, Tables D.18 to D.27).

These findings suggest that, in time, if HIW plans become more widely available and if consumers gain more experience with them, demand rates can be expected to rise somewhat beyond those estimated in the current survey. It is important to note, however, that even among respondents with previous inspection experience, demand rates at the breakeven prices discussed earlier in this chapter are, in general, relatively low. Thus, the basic finding of the earlier analysis--that there is only relatively limited demand among home buyers for HIW protection--could be expected to remain true even after the market gained increased experience with HIW plans.

## Effects on Demand of Prior Experience With Warranties

In contrast to the results noted above with regard to prior experience with home inspections, the Demand Survey data do not reveal any clear patterns with regard to the relationship between demand and previous warranty experience. For some programs at some prices, estimated demand rates are somewhat higher for home buyers with previous warranty experience than they are for those with no such experience. This is true, for instance, for the FHA sample with regard to Option SM-2 at the medium price (see Appendix D, Tables D.18 to D.27). In other instances, however, the reverse relationship is observed. This is the case, for example, when the non-FHA rather than the FHA data are analyzed for the same option and the same prices as before. In part, this lack of a clear pattern in the data may be due to the small sample sizes resulting from the very limited experience (see Section 2 above) which respondents in the survey had with warranties.

### CORRELATION OF DEMAND WITH HOME REPAIR INCIDENTS PRIOR TO THE SURVEY

There was a tendency for interest in each of the HIW options to be correlated with the incidence of repair problems during the three to four months between the time the respondents had bought their homes and the time of the survey (see Appendix D, Tables D.18 to D.27). For instance, while only 5 percent of FHA sample respondents who had had no repair problems rated themselves "absolutely certain" to buy the SM-2 option at the midpoint of the price range, this number increased to 8 percent for respondents

preference dropped to 15 percent among those who had experienced one or two problems, and to 6 percent among those who had not experienced any problems.

There are at least two possible explanations for these findings. One is that they are due to the timing of the survey. For respondents in the no-problem category, the absence of any problems after a two- or three-month ownership period may have tended to dampen interest in an HIW plan by suggesting that the risk of repairs was small, while the reverse may have been true with respect to homeowners who had experienced problems. To the extent that this is the correct explanation of the data, it would suggest that, vis a vis true demand at the time of home purchase, the estimated demand rates in the survey data are biased downward for the no-problem group and upward for the group which had experienced problems. These biases would at least partially offset one another in the bulk of the overall demand analysis reported in this study. Since only about 35 percent of each sample had experienced repair problems, prior to the survey it is possible that in the aggregate data, the net effect of these two biases on the demand estimates may be negative. However, since the magnitudes of the individual biases cannot be observed, it is impossible to determine for sure whether this is the case.

Another possible interpretation of the correlation of demand rates with repair incidence is that, even before purchase, some home

Number of Options "Absolutely Certain" to Buy	Number of Problems		
	None	1 or 2	3 or More
One	68%	54%	50%
Two	15	12	14
Three	7	14	10
Four	3	7	10
Five	2	5	8
Indecided on at Least One Option	1	3	3
Total	4	5	5
	100%	100%	100%

thus have expressed a strong interest in buying warranty protection even if interviewed at that time. This interpretation would suggest that adverse selection could be a potential problem for voluntary HIW programs. This issue is discussed more fully in Chapter VI.

The need to develop public policies to protect buyers of previously occupied housing against unexpected repair costs during the first few years of ownership depends in part on the frequency with which repair problems arise and on the likely costs of these repairs. Furthermore, it is possible that different market segments may experience problems at different rates, suggesting a need for protection among some groups but not others. The Needs Survey, therefore, was designed to answer the following questions about homeowners' repair problems:

- (a) How often do homeowners experience unanticipated repair problems?
- (b) What types of problems are most likely to occur?
- (c) What are the costs of repairing these problems?
- (d) Does the probability of experiencing problems vary across type of home or homeownership?

These questions were answered by conducting a national telephone survey of 916 homeowners with FHA-insured mortgages and 898 homeowners without FHA-insured mortgages--both groups having purchased homes about two years ago. (The sample design is described in more detail in Appendix I.)

As noted in Chapter I, the FHA and non-FHA samples clearly represent different segments of the housing market. The FHA sample is composed of younger, first-time buyers with annual incomes concentrated in the \$16,000 to \$21,000 range. Houses in the FHA sample are also older (predominantly 10 to 29 years old), lower priced (median price of about \$28,000), and more likely to be in an urban location than are houses in the non-FHA sample.

encountered, and variations in problem experience by age of house, house price, and household income were examined. Second, the average cost of unanticipated problems, the distribution of repair costs, and variations in average cost by selected household characteristics were considered. Finally, the financial burden generated by unanticipated problems was assessed by combining problem incidence and costs into an overall measure of expected financial loss due to unanticipated problems.

Section A defines "unanticipated problems" and discusses the incidence of problems by type of problem, time of occurrence, age of house, price of house, and family income. Section B focuses on the average costs and expected loss of such unanticipated repairs. Section C examines both the extent to which various warranty programs would cover the problems that the sample of homeowners experienced and the effects on potential claim rates under various HIW programs of altering the major assumptions about the eligibility of problems.

## A. INCIDENCE OF PROBLEMS

### 1. Defining Eligible Repair Problems

Most people can list a number of conditions which they would consider as "problems" with their homes. But not all such housing problems involve defects which would be eligible for coverage under a warranty program. Needs Survey respondents reported over 2,200 problems, of which only 1,240 were identified in the analysis as being eligible for warranty coverage. The process by which the set of reported problems were screened down to the subset of eligible problems is described below.



Several separate criteria were used to obtain the subset of eligible problems from all the problems reported in the survey. The first limited the definition of "problems" to those that occurred within 24 months of purchase.<sup>1/</sup> The second screening criterion concerned the nature of the necessary repair. The survey attempted to focus the respondents' answers on repairs that were required because some component of the house (e.g., the heating system) was not working, or because parts of the house had become unsound (e.g., sagging floor or moisture penetration of the roof). Problems that involved only remodeling or improvements (e.g., adding insulation or increasing heating or air conditioning capacity) were not considered eligible for warranty coverage.<sup>2/</sup> Problems that involved cosmetic repairs (e.g., hairline plaster cracks or replacing worn floor coverings) or normal maintenance (e.g., exterior painting) rather than repairs of hidden defects were also excluded. Repairs necessitated by "acts of God" (e.g., floods or tornadoes) or accidents were excluded because they would generally be covered under a homeowner's hazard insurance. Repairs made solely to bring the house into compliance with local building codes were also excluded from the definition of problems eligible for warranty coverage.

Two additional criteria were used to screen out problems in much of the analysis reported below. First, in order to focus the analysis on major expenses, only problems costing \$100 or more to repair were considered

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<sup>1/</sup> The sample included some households who purchased homes slightly more than two years ago. Problems occurring just prior to the survey could therefore have happened after the end of the two-year warranty period chosen for analysis.

the time of purchase were defined as eligible. Previously known defects were excluded because they would, in all likelihood, be detected during even a cursory HIW inspection and thus would not be included under the warranty coverage. These two screening criteria were imposed throughout the analysis in Sections A and B. The effects of defining such problems as eligible are considered briefly in Section C.

## 2. Distribution of Problem Occurrences

The extent to which eligible problems occurred among respondents is described below in terms of the probability that given households experience a problem, the type of problem occurrence, and the timing of the problem occurrence during the first two years after purchase.

Probability of Experiencing Problems. The majority of homeowners did not experience an unanticipated problem costing \$100 or more during the first two years of ownership (see Table IV.I). Nearly 65 percent of non-FHA sample and slightly more than half the FHA sample had no unanticipated repair problems. About 25 percent in each sample experienced only one problem during that time. However, although while most families had zero problem, a small number--especially among the owners with FHA-insured mortgages--experienced three or more problems.

The likelihood of experiencing a problem and of experiencing multiple problems is higher in the FHA sample. Within each sample, however, the distribution of problem occurrences is very similar across family income,

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<sup>1/</sup>Details of how repair costs were computed and how missing cost

PERCENT<sup>a/</sup> OF HOMEOWNERS EXPERIENCING PROBLEMS COSTING MORE THAN \$100

WITHIN THE FIRST TWO YEARS OF OWNERSHIP

	FHA				Non-FHA			
	Number of Problems				Number of Problems			
	None	One	Two	Three +	None	One	Two	Three +
total Sample	52	27	11	10	64	25	8	3
Number of Previous Homes								
None	51	29	11	9	64	24	9	4
One	53	23	13	11	59	28	11	3
Two or more	55	19	16	10	69	22	6	3
Size of House								
Less than 10 years	73	18	7	3	67	27	5	1
10-29 years	51	27	12	11	61	25	10	4
30 years or more	45	30	14	11	65	23	9	3
House Price								
\$21,000 or less	55	27	9	9	73	20	6	1
\$21,001 - 28,000	50	26	12	12	70	21	7	3
\$28,001 - 35,000	54	23	14	9	59	28	9	5
\$35,001 or more	46	30	14	11	55	28	12	5
Family Income								
\$12,000 or less	53	29	7	11	66	27	6	2
\$12,001 - 16,000	51	27	11	11	59	23	12	6
\$16,001 - 21,000	48	28	14	9	62	25	9	4
\$21,001 or more	50	26	14	11	61	24	11	4

Row percentages may not add to 100 because of rounding.

is in the non-FHA sample, in which houses priced over \$28,000 had a greater likelihood of having a problem occur. This is examined more closely in Section 3.

Type of Problem. The main structure and mechanical systems represented over 70 percent of all problems experienced by the homeowners (see Table IV.2). The two largest single sources of trouble--the plumbing system and the roof--accounted for over 40 percent of the problems. The importance of these two problem areas is that they underscore the concern for major problems that affect the livability of the house, as expressed in the Congressional mandate. The results may also help explain the strong consumer preference for warranty coverage on structural and mechanical systems problems, as discussed in Chapter III.

The incidence of problems can also be summarized in terms of the average number of problems per owner (see Table IV.3).<sup>1/</sup> In the non-FHA sample, for instance, the average homeowner experienced 0.53 problems within the first two years. Owners in the FHA sample could expect over 50 percent more problems, having experienced 0.83 problems within the first two years. This difference between the FHA and non-FHA samples is statistically significant and emphasizes the fact that the FHA homeowner faces a higher risk of experiencing unanticipated problems, as noted earlier.<sup>2/</sup>

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<sup>1/</sup> This measure is analogous to an average claims rate under a warranty program. It is higher than the probability of experiencing a problem because the effect of multiple problems per household is included.

<sup>2/</sup> Statistical significance was tested throughout this chapter by a standard difference of means test using the standard deviations which appear in Appendix 1. See W. L. Dwyer and E. J. Masson, Jr., Introduction to Statistics

PERCENTAGE DISTRIBUTION OF PROBLEMS COSTING MORE THAN \$100

WITHIN THE FIRST TWO YEARS, BY PROBLEM TYPE .

Problem Type	FHA	Non-FHA
Structure	39	29
Roof	21	17
Walls, ceilings, floors	7	5
Foundation	6	3
Porches, garages	5	4
Mechanical Systems	39	43
Plumbing	24	26
Heating	10	9
Air Conditioning	3	6
Electrical	2	2
Appliances	12	12
Other	11	16
Septic, sewerage, water systems	9	13
Wet basements	2	3

Note: Percentages may not add to 100 because of rounding.

Problem Type	FHA	Non-FHA
Structure	.33	.15
Roof	.17	.09
Walls, ceilings, floors	.06	.02
Foundation	.05	.02
Porches, garages	.04	.02
Mechanical Systems	.32	.23
Plumbing	.20	.14
Heating	.08	.05
Air Conditioning	.03	.03
Electrical	.02	.01
Appliances	.10	.06
Other	.08	.09
Septic, sewerage, water systems	.07	.07
Wet basements	.01	.02
Total	.83	.53

on-FHA owner, was likely to have had twice as many main structure problems and about one-third more problems with mechanical systems. Both differences are statistically significant and probably reflect the older, less expensive urban housing which predominates in the FHA market.

Timing of Problems. The overwhelming majority of problems (80 percent) in both samples occurred in the first year (see Tables IV.4 and IV.5); indeed, 25 percent occurred within the first month and 55 percent within six months of the purchase. This pattern is consistent with the experience of existing inspection-warranty firms. The early occurrence of these problems may be the result of the previous owner postponing maintenance tasks, as well as failing to disclose existing defects to the buyer at the time the house was purchased.

For most problem types, the average number of problems per month declined sharply between the first two months and then declined gradually thereafter. Appliance problems in the FHA sample were somewhat of an exception, showing a very high concentration in the first month and a mild surge in the last half of the first year.

The pattern does not support the concern expressed by respondents in the Demand Survey for the need for extended coverage beyond two years. Only 14 and 18 percent of the respective FHA and non-FHA structural problems occurred in the second year. Even lower rates would appear likely for the third year. Somewhat more mechanical systems problems occurred in the second year in both samples. But since these occurred in the second season of heating and air conditioning use, the slight increases may represent normal mechanical wear rather than hidden defects

TABLE IV.4

PERCENTAGE<sup>a/</sup> OF PROBLEMS COSTING \$100 OR MORE, BY PERIOD  
OF OCCURRENCE AND PROBLEM TYPE FOR THE PHA SAMPLE

Problem Type	First Month	Period of Occurrence					Percent of Two-Year	First Year a
		2 - 3 Months	4 - 6 Months	7 - 12 Months	13 - 24 Months			
Structure	23	15	21	27	14	86		
Roof	22	17	20	30	11	89		
Walls, ceilings, floors	30	6	20	28	17	83		
Foundation	19	21	23	23	13	87		
Porches, garages	24	15	27	15	20	80		
Mechanical Systems	22	11	19	25	23	77		
Plumbing	22	12	21	21	22	78		
Heating	25	10	12	27	26	74		
Air conditioning	8	8	19	38	27	73		
Electrical	21	14	21	29	14	86		
Appliances	36	7	8	31	18	82		
Other	31	13	12	22	23	77		
Septic, sewerage, water systems	32	8	9	26	26	74		
Wet basements	25	42	25	0	8	92		
Total	25	12	18	26	19	80		

<sup>a/</sup> Entries are number of problems occurring in period divided by the number of problems of that type which occurred over the period. Row percentages may not add to 100 because of rounding.



TABLE IV.5

PERCENTAGE<sup>a/</sup> OF PROBLEMS COSTING \$100 OR MORE, BY PERIOD OF OCCURRENCE AND PROBLEM TYPE FOR THE NON-FHA SAMPLE

Problem Type	First Month	Period of Occurrence					13 - 24 Months	First Year as Percent of Two-Year Total
		2 - 3 Months	4 - 6 Months	7 - 12 Months	13 - 24 Months			
Structure	24	14	22	22	18	82		
Roof	29	15	24	19	14	86		
Walls, ceilings, floors	9	9	27	32	23	77		
Foundation	13	13	19	38	19	81		
Porches, garages	29	18	12	12	29	71		
Mechanical Systems	20	12	15	28	25	75		
Plumbing	23	12	13	30	23	77		
Heating	16	5	18	32	30	70		
Air conditioning	7	23	23	17	30	70		
Electrical	42	17	0	25	17	83		
Appliances	25	13	20	27	15	85		
Other	25	13	26	22	14	86		
Septic, sewerage, water systems	25	11	27	21	16	84		
Wet basements	21	21	21	29	7	93		
Total	22	13	19	25	20	80		

<sup>a/</sup> See footnote to Table IV.4.

program, it is also important to know whether owners with certain characteristics within each sample faced a higher risk of experiencing problems than did other owners. Such information is important for designing potential HIW programs, because the presence of differential problem incidences identifies those owners for whom provision of warranty protection may be essential as a policy objective.

The presence of higher problem rates in certain segments of the market would also suggest a potential adverse selection problem caused by certain types of homeowners who have higher-than-average problem rates being overrepresented among participants in a voluntary HIW program. Although the analysis in Chapter III revealed that there is no difference in demand for HIW protection by market segments (i.e., age of house, family income, and house price), variations in problem rates provide a second test of the likelihood of adverse selection.

Age of House. Problem rates consistently increased with the age of the house in the FHA sample (see Table IV.6) but showed a less clear pattern in the non-FHA sample. However, in each case, there was a statistically significant difference between houses under 10 years old and those 10 to 29 years old. These differences were generated primarily by a higher incidence of structural problems in the older houses. For the FHA sample the differences in structural problem rates are statistically significant for all three age-of-house categories. In the non-FHA sample,

AVERAGE NUMBER OF PROBLEMS COSTING \$100 OR MORE,

BY AGE OF HOUSE, PROBLEM TYPE, AND PERIOD

Age of House (years)	1st Year			1st Two Years			Total	Other	Total
	Main Structure	Mechanical Equipment	Appliances	Main Structure	Mechanical Equipment	Appliances			
Under 10	.10	.10	.04	.07	.16	.04	.30	.10	.40
10 - 29	.28	.25	.11	.07	.33	.13	.70	.08	.78
30 or more	.37	.30	.03	.06	.44	.04	.76	.08	.84
1 houses	.28	.25	.08	.07	.33	.10	.68	.08	.76
11A									
Under 10	.04	.14	.04	.07	.19	.06	.30	.09	.39
10 - 29	.13	.29	.08	.08	.28	.08	.50	.10	.60
30 or more	.18	.16	.03	.61	.20	.03	.43	.07	.50
1 houses	.12	.18	.05	.07	.23	.06	.42	.09	.51

only the difference between the first two categories is significant. Problem rates for mechanical systems also increased consistently with the age of the house in the FHA sample but were distributed more uniformly across age categories in the non-FHA sample.

The correlations noted above between claims rates and age of house patterns suggest that adverse selection could potentially be a serious problem under any HIW program limited to only the FHA sector. This potential would be particularly high for programs limited solely to coverage of structural problems. This result underscores the trade-off between providing coverage to a target group (such as FHA owners in declining neighborhoods, where most housing is older) and the increasing cost of that protection implied by the relatively high problem rates for older homes.

House Price.<sup>1/</sup> Problem rates were hypothesized to vary inversely with housing quality, and the house price can be interpreted as a crude proxy for quality. The FHA sample showed few differences by house price (see Table IV.7). However, the highest priced FHA houses (virtually all between \$35,000 and \$50,000), had higher problem rates over the two-year period (.97) than did the lowest priced houses (.760); the difference is statistically significant.

In the non-FHA sample during the two-year period, the most expensive houses had problem rates twice as high as those under \$21,000 (.69 and .37, respectively). Because this statistically significant difference

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<sup>1/</sup> House price was unavailable for 34 FHA cases and 89 non-FHA cases. These cases were not included in this part of the analysis.

**AVERAGE NUMBER OF PROBLEMS COSTING \$100 OR MORE,**

BY HOUSE PRICE, PROBLEM TYPE, AND PERIOD

**Note:** House price was unavailable for 34 PHA cases and 89 non-PHA cases. These cases were not included in this part of the analysis.

rather than differences in construction quality.

Family Income.<sup>1/</sup> Problem rates were expected to be inversely related to income level by the association between income and housing quality. However, the data (see Table IV.8) did not show the hypothesized inverse relationship for either sample. The weak patterns that did exist mirror the results noted for house price, which itself tends to be correlated with income.

## B. REPAIR COSTS

### 1. Average Repair Costs

The average repair cost per problem (see Table IV.9) was somewhat higher in the FHA sample (\$530 per claim) than in the non-FHA sample (\$481 per claim), but the difference is not statistically significant. Structural problems were by far the most expensive type of problem in both samples. Roof problems, which were one of the most frequently encountered problems, were especially expensive to repair, costing, on average, \$817 and \$756 in the FHA and non-FHA samples, respectively.

Table IV.10 compares the distribution of repair costs for each sample. In both cases, over 30 percent of the problems could have been repaired for less than \$200, while about 90 percent cost less than \$1,000 to repair. This distribution of costs suggests that the risk of a very

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<sup>1/</sup>Families who did not answer the income question are not represented in the table. This excluded 59 and 122 cases from the FHA and non-FHA samples, respectively.

TABLE IV. 8

AVERAGE NUMBER OF PROBLEMS COSTING \$100 OR MORE,  
BY TOTAL FAMILY INCOME, PROBLEM TYPE, AND PERIOD

Family Income	1st Year				1st Two Years					
	Main Structure	Mechanical Equipment	Appliances	Other	Total	Main Structure	Mechanical Equipment	Appliances	Other	Total
00 or less	.21	.27	.06	.06	.60	.26	.34	.08	.10	.78
01 - \$16,000	.29	.28	.06	.08	.71	.32	.37	.06	.10	.87
01 - \$21,000	.33	.23	.09	.05	.71	.40	.30	.12	.06	.87
\$21,000	.30	.27	.10	.09	.76	.33	.36	.11	.12	.92
00 or less	.18	.11	.02	.06	.37	.21	.14	.02	.07	.43
01 - \$16,000	.12	.22	.08	.11	.53	.15	.29	.09	.13	.66
01 - \$21,000	.11	.20	.04	.09	.44	.14	.28	.06	.10	.58
\$21,000	.12	.22	.08	.07	.49	.15	.30	.08	.08	.61

Families who did not answer the income question are not represented in the table. This excluded 59 and 122 cases from the FIIA and non-FIIA samples, respectively.

Problem Type	FHA	Non
Structure	\$698	\$6
Roof	817	
Walls, ceilings, floors	707	
Foundation	582	
Porches, garages	360	
Mechanical Systems	446	3
Plumbing	349	
Heating	515	
Air conditioning	477	
Electrical	351	
Appliances	315	2
Other	618	5
Septic, sewerage, water systems	552	
Wet basements	987	
Total	530	4

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Note: Problems occurring within the first two years are pooled.



## DISTRIBUTION OF REPAIR COSTS FOR PROBLEMS

## COSTING \$100 OR MORE

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Cost Range	Percents in Each Cost Range	
	FHA	Non-FHA
\$100 - \$200	31	34
\$201 - \$400	13	19
\$401 - \$600	21	15
\$601 - \$800	21	16
\$801 - \$1,000	5	5
\$1,001 - \$1,200	2	2
Over \$1,200	7	9
Total	100%	100%

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in both samples.<sup>1/</sup>

Average repair costs were also examined for variations across income level, house price, and age of house (see Appendix E, Tables E.1 to E.3). No significant differences in cost were found.

## 2. Expected Losses

Problem rates and average costs of repairs provide only partial indications of the financial effects of unanticipated problems. A more complete picture is provided by computing the average or expected loss (see Table IV.11).<sup>2/</sup> For FHA homeowners in the first year of ownership the expected loss was \$358. This is almost 75 percent higher than the expected loss of \$204 for non-FHA owners.

The contrasting differences between the FHA and non-FHA owners in terms of expected losses over two years (\$441 and \$225, respectively) and in average annual family income (about \$16,000 and \$20,000, respectively) indicate the greater financial burden that unanticipated problems imposed on the FHA owner.

This burden is underscored further by considering the distribution of expenses per family (see Table IV.12). About 14 percent of the FHA families experienced problems which resulted in total expenses greater than \$1,000 over the two years after purchase. A small minority of families (4 percent) incurred total expenses of more than \$2,000. Slightly

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<sup>1/</sup> This distribution does not reflect the effect of multiple problems on the total costs per family. This is considered in the next section.

TABLE IV.11

## EXPECTED LOSS DUE TO UNANTICIPATED REPAIR PROBLEMS

COSTING \$100 OR MORE

Period	FHA	Non-FHA
First year	\$358	\$204
Second year	83	51
First two years	441	255
Age of House <sup>a/</sup>		
Under 10 years	198	163
10 - 29 years	436	322
30 or more	553	233
Family Income <sup>a/</sup>		
\$12,000 or less	411	222
\$12,001 - \$16,000	457	308
\$16,001 - \$21,000	472	297
over \$21,000	487	280

<sup>a/</sup>Computed for the first two years.

\$	FHA	Non-FHA
0	52 %	64 %
100 - 200	7 %	8 %
201 - 400	10 %	10 %
401 - 600	6 %	4 %
601 - 800	7 %	4 %
801 - 1000	4 %	2 %
1001 - 1500	6 %	4 %
1501 - 2000	4 %	2 %
over \$2000	4 %	2 %

Note: Percentages may not add to 100 because of rounding.

had expenses over \$1,000, and 2 percent had expenses over \$2,000. The proportion of FHA families incurring expenses over \$1,000 increases steadily with income (not shown). In the lowest income range under (\$12,000), about 14 percent of the families had expenses over \$1,000. In the highest income range (over \$21,000), almost 34 percent of the families had expenses over \$1,000. No such tendency could be noted in the non-FHA sample.

Expected losses increased sharply by the age of the house in both samples (see Table IV.11). In the FHA sample, increasing repair incidence and costs for structure and mechanical equipment problems almost tripled the expected losses for houses over 30 years old (\$553), as compared to expected losses for houses less than 10 years old (\$198). In both samples, variations in expected losses by house price (not shown) and income were minor because average repair costs were very stable across these market segments. This means, however, that relative to income, unanticipated repair expenses were a heavier burden on the lower income families.

The high level of expected loss per family in the FHA sample also suggests that an HIW program directed toward the FHA sector would be relatively expensive. Both the higher problem rates and average cost per problem that generated the high expected losses would contribute to high expected claims costs in an ongoing HIW program. Chapter V analyzes this tendency in detail.

### C. VARIATIONS IN COVERAGE UNDER ALTERNATIVE HIW PROGRAMS

The problem rates and expected loss estimates presented above describe the dimensions of the risks confronting owners during the

examined under alternative assumptions as to the types of inspection process and types of problems covered under the program.

### 1. Potential Coverage

Four variations of program coverage were examined, each for one and two years of coverage.<sup>1/</sup> The protection provided by the coverage of various options can be illustrated by comparing the frequency of problems and costs covered under various options to the total problems and costs the average homeowner expected to experience (see Table III.13).<sup>2/</sup>

Disregarding the SMA option, the SM option provided the greatest extent of protection, measured either in terms of the expected number of problems (77 and 69 percent covered for the FHA and non-FHA samples, respectively) or the proportion of expected loss (66 and 56 percent for the FHA and non-FHA samples, respectively). Plan MA, which had almost as broad a coverage of the number of expected problems (56 to 63 percent as Option SM, covered a substantially smaller proportion (30 to 35 percent of the expected costs. Plan S, while considerably less attractive than plan MA in terms of the number of problems covered (27 to 41 percent), was more attractive than the MA option in the proportion of costs covered. This reversal in the relative attractiveness of the MA and S options was in both sectors for both years, but it was especially strong in the FHA

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<sup>1/</sup>These correspond to the options listed in the Demand Survey, which are described in detail in Chapter III.

<sup>2/</sup>The SMA option is virtually inclusive of all problems except

# EXTENT OF COVERAGE UNDER ALTERNATIVE HIW PLANS

Plans	FHA			Non-FHA		
	Claims Rate	% of Total Problem Rate <sup>a/</sup>	% of Expected Cost <sup>b/</sup>	Claims Rate	% of Total Problem Rate <sup>a/</sup>	% of Expected Cost <sup>b/</sup>
One-Year						
S	.28	41	45	.12	28	34
SM	.53	77	66	.30	69	56
SMA <sup>a/</sup>	.68	100	82	.43	100	81
MA <sup>c/</sup>	.76	56	35	.64	62	31
Two-Year						
S	.33	38	45	.15	27	34
SM	.65	76	66	.38	70	58
SMA <sup>a/</sup>	.83	100	81	.53	100	79
MA <sup>c/</sup>	.96	57	30	.82	63	34

<sup>a/</sup> The problem rate for Option SMA which is inclusive of virtually all problems is used as the base.

<sup>2/</sup> Computed as: (claims rate x average cost of problems covered net of deductible) ÷ (total problem rate x total average cost).

<sup>c/</sup> The MA total problem rates are computed on the basis of all problems costing at least \$50.

SMA plans, depending on the restrictiveness of the inspection process incorporated in the program. The estimates described above assume only a cursory inspection. More detailed inspections would disclose more potential problems, reduce the claims rates and lower the extent of coverage. The effects of alternate inspection assumptions on claims rates are examined in the next section.

## 2. Claims Rates Under Alternate Levels of Inspection

The claims rates used above approximate the effects of a cursory inspection by excluding problems that homeowners were aware of at the time of sale. The effects of no inspection can be approximated by relaxing this restriction. The effects of a detailed inspection process with a more restrictive attitude toward problem eligibility can be approximated by excluding problems in older components which might be caught by such inspections in addition to those excluded under a cursory inspection. These variations in claims rates are compared below (see Table IV.14).<sup>1/</sup>

The Effects of Detailed Inspections. The effects of a more detailed inspection requirement were examined by eliminating from the analysis problems which the respondents described as those caused by the general age of the house component (e.g., a 30-year-old worn-out roof). These problems were excluded on the grounds that relatively older home components would be given particularly careful scrutiny during a detailed inspection, and

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<sup>1/</sup>The MA plan is excluded from these comparisons primarily because inspections would not vary under this plan since the program is designed to operate only with a cursory inspection. Furthermore, detailed data on the \$50 to \$100 repair problems were not available to develop a valid



ould be noted that these exclusions, in all likelihood, provide a lower-  
und estimate of claims rates in a program with a detailed inspection.  
ual rates may be somewhat higher, since not all potential repair prob-  
s involving older components would be detected during such inspections.

Use of the more stringent screening criteria caused the potential  
claims rates to drop between 30 and 50 percent, as compared to those for a cur-  
ry inspection. The largest reduction occurred in the SM and SMA options be-  
se these covered the components most likely to be affected by aging. The  
fects were similar in both samples.

In other results based on the more stringent screening criteria (see  
pendix F, Tables F.10 and F.12) the strong association between claims rates  
d age of house in the FHA sample noted earlier (see Table IV.6) decreased  
was still quite evident. For the non-FHA sample, however, this associa-  
on was insignificant. Average repair costs under the more restrictive cri-  
ria remained virtually unchanged in the FHA sample but decreased by 7 to 15  
cent in the non-FHA sample (see Appendix F, Tables F.11 and F.13).

The Effect of No Inspections. Relaxing the criterion which excluded  
blems that the respondents said were known at the time of purchase, gen-  
ted substantially higher claims rates than those observed under a  
rsory inspection. Rates increased by 18 to 24 percent in the FHA sample  
increased substantially more, by 49 to 106 percent in the non-FHA sample.  
both samples, the largest increases occurred with Option S. The sharp  
ference between the two samples may reflect either differences in the  
ure of defects present in homes in the two sectors or it may result

on FHA buyers (who are more likely to be first-time buyers) being less able

### 3. Other Eligibility Criteria

With the exception of Option MA, all of the plans examined above restrict eligibility to problems which cost at least \$100 to repair. Warranty coverage could, however, be extended to cover problems costing between \$50 and \$100 to repair. The effects of such an extension on incidence rates are examined below. One other potential source of problems, those repaired by the previous owner prior to sale, are also examined.

Problems Costing \$50 to \$100. Extending coverage to include repairs costing \$50 to \$100 would increase the total problem rates by 101 and 147 percent for the FHA and non-FHA sectors, respectively (see Table IV.15). Because the average cost of these additional problems is, by definition, relatively small, the effect on expected losses was much smaller (not shown). For the average household, the expected loss over two years from these problems was only \$63 for FHA families and \$58 for non-FHA families.

The frequency of these minor repairs, while particularly high for mechanical systems problems, did not pose a major financial burden to most homeowners. Extending coverage to include these repairs in an HIW program,

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<sup>1/</sup>To the extent that the latter interpretation is correct, estimated differences in eligible problem rates between the two sectors must be interpreted with caution, since they may reflect differences in the abilities of home buyers in the two sectors to detect problems.

Problems Repaired by the Previous Owner. About 35 and 17 percent of the FHA and non-FHA sample, respectively, had the previous owner make at least one repair costing more than \$50 (not shown).<sup>1/</sup> Table IV.16 shows by type of problem the fractions of respondents for whom repairs were made by the previous owner. Those rates can be considered approximate problem rates,<sup>2/</sup> but because there is no additional detail by which to determine whether these problems involved repairs rather than improvements or building code enforcement, these rates must be considered only as an indication of the order of magnitude involved.

Under most circumstances, problems repaired by the previous owner would not be considered eligible for warranty coverage. The fact that the previous owner repaired them as a condition of the sale suggests that a cursory inspection would have identified their presence. The FHA certification process would probably prevent most of these problems from becoming potential claims for an HIW program limited to the FHA sector. However, a program open to the non-FHA sector would have to consider some minimal type of inspection to prevent such problems from becoming a potential source of claims.

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<sup>1/</sup> The higher FHA rate probably also reflects presale repairs and improvements required as part of the FHA appraisal and certification process.

<sup>2/</sup> This assumes that only one problem of each type was repaired. More than one type of problem could have been repaired, but this does not affect the problem rate as calculated.

	<u>One-Year Coverage</u>			<u>Two-Year Coverage</u>		
	S	SM	SMA	S	SM	SMA
<b>FHA</b>						
Lower-Bound Estimates of						
Rates with Detailed Inspection	.20	.33	.40	.23	.41	.50
(Percent Decrease) <sup>a/</sup>	(28)	(37)	(40)	(28)	(38)	(40)
Rates with Cursory Inspection	.28	.53	.68	.33	.65	.83
Rates with No Inspection	.35	.63	.80	.40	.77	.98
(Percent Increase) <sup>a/</sup>	(24)	(19)	(18)	(23)	(19)	(18)
<b>Non-FHA</b>						
Lower-Bound Estimates of						
Rates with Detailed Inspection	.07	.15	.22	.09	.20	.28
(Percent Decrease) <sup>a/</sup>	(42)	(49)	(47)	(40)	(48)	(48)
Rates with Cursory Inspection	.12	.30	.42	.15	.38	.53
Rates with No Inspection	.25	.48	.65	.30	.59	.79
(Percent Increase) <sup>a/</sup>	(106)	(62)	(53)	(97)	(53)	(49)

<sup>a/</sup> Compared to rates with cursory inspection.

PROBLEMS COSTING \$50 TO \$100, BY PROBLEM TYPE,

OVER THE TWO-YEAR PERIOD

	Problem Type				Total
	Main Structure	Mechanical Systems	Appliances	Other	
Problem Rate for 0 to \$100 Repairs	.19	.47	.07	.11	.84
Problem Rate for all blems over \$50	.52	.79	.17	.19	1.67
Percent Increase over 0 Problem Rate <sup>a/</sup>	58	147	70	138	101
THA					
Problem Rate for 0 to \$100 Repairs	.15	.45	.07	.11	.78
Problem Rate for all blems over \$50	.30	.68	.13	.20	1.31
Percent Increase over 0 Problem Rate <sup>a/</sup>	100	196	117	122	147

Computed as  $\frac{\text{Row 1}}{\text{Row 2} - \text{Row 1}}$  .

Problem Type	FHA	Non-FHA
Structure	.26	.08
Roof	.07	.03
Walls, ceilings, floors	.09	.03
Foundation	.04	.01
Porches, garages	.06	.01
Mechanical Systems	.20	.09
Plumbing	.09	.04
Heating/Air conditioning	.04	.03
Electrical	.07	.02
Appliances	.02	.02
Other	.03	.01
Septic, sewerage, water systems		
Total	.51	.20

The legislative mandate for the current study included an investigation of the "cost and feasible structure of a national home inspection and warranty program." This chapter draws upon the results of the previous research to analyze the feasibility (in terms of revenues being sufficient to cover costs) of alternative HIW programs, with regard to such important issues as breakeven prices, participation rates, claims rates, and administrative costs. Section A below describes the way in which the feasibility of alternative program options was examined, while Section B reports the results of the analysis. Finally, Section C discusses the degree to which the results of the basic analysis were sensitive to the assumptions on which the analysis was based.

### A. KEY ASSUMPTIONS OF THE ANALYSIS

The following discussion provides an overall summary of the way in which data from the Demand Survey, the Needs Survey, and the review of existing public and private programs were combined in order to determine the feasibility of alternative HIW programs. Additional details concerning the procedures used in this work appear in Appendix F.

#### 1. Analytical Techniques Used to Simulate Programs

The task of examining feasible program options was complicated by the fact that there is a simultaneous relationship between costs and participation. On the one hand, both administrative and claims costs for

was to develop program demand estimates under various assumptions about premium levels, and to develop program cost estimates under various assumptions about participation rates. For any given program option, it was then possible to search over possible combinations of premium levels and participation rates in order to find a breakeven price at which the revenues which would be generated would be approximately equal to the costs of running the program.

Implementation of this approach to determining program feasibility required the use of a large number of assumptions about such factors as claims rates and participation rates and costs. The sections below describe the way the results of the research reported in Chapters II-IV were used to develop these assumptions.

## 2. Assumed Administrative Context

All of the simulations reported below assumed that in operating an HIW program, HUD would make use of decentralized administrative procedures, with the bulk of the administrative work taking place in HUD area offices and with reviews of disputed claims decisions being handled at the regional office level. This assumption is based on HUD's current pattern of decentralized program administration for most of its other programs, including the Section 518 program and the overall FHA insurance program.

In the simulations of coverage Options S, SM-1, SM-2, and SMA, it was assumed that these programs would operate in a fashion similar to that of existing inspection-type private HIW programs. As described in Chapter II, these private programs involve presale inspection of the repair problem,



personnel would perform a very quick presale inspection of the home, similar, for example, to that now performed by real estate agents selling warranties through Electronic Realty Associates, Inc. In addition, it was assumed that no separate validation inspection would be included in the claims processing procedure, but, rather, that service personnel would be dispatched directly to the home by the program in response to reports of repair problems. Finally, it should be noted that in the development of cost assumptions for all of the simulation work, it was assumed that an HIW program run by the government could be operated at approximately the same level of efficiency as that characterizing existing private programs.

### 3. Demand Assumptions

Estimated HIW participation rates for the feasibility analysis were based on the data from the Demand Survey reported in Appendix D. Using this data, which showed demand at three prices, demand curves were constructed by linear extrapolation, i.e., for any given price, the demand curve corresponding to that price was assumed to be the straight line passing through the two known points on the curve closest to the price in question. Separate estimates of participation rates were made for each of six market segments defined by FHA status and age of house.<sup>1/</sup>

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<sup>1/</sup> Age of house was chosen as the basis of the categorization of households into market segments because, as discussed in Chapter IV, claims rates appear to be more affected by age of house than by any other household or building characteristic.

of total existing sales volume for FHA and non-FHA homes for that year were derived from an econometric model developed by Kenneth Rosen and Dwight Jaffee of Princeton University.<sup>2/</sup> Demand Survey data from Appendix D, Tables D.1-D.10 were used to distribute existing home sales totals among age of house categories. In the analysis involving mandatory FHA programs, FHA participation totals were adjusted downward to reflect the possibility of households choosing not to use the FHA program in order to avoid the necessity of purchasing HIW protection. This adjustment was made by using the Demand Survey data, in which 13 percent of the FHA sample indicated both that they could have financed their homes without FHA insurance, and that they would not have applied for FHA financing if an HIW program had been required.

#### 4. Claims Rates and Claims Costs Assumptions

For HIW plans offering coverage only of mechanical systems and appliances and involving only a cursory inspection of the home, the feasibility analysis assumed that claims rates would be those shown in Appendix F, Table F.10. These claims rates are based on a tabulation of problems which were considered eligible for HIW coverage and which were not known to the home purchasers before they bought the house. Problems known before purchase were excluded in this work on the assumption that such problems

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<sup>1/</sup> 1978 estimates were used rather than historical data in order to approximate as closely as possible the conditions which would exist by the time an actual HIW program was enacted and implemented.

<sup>2/</sup> The model and forecasts are proprietary information and are available on a subscription basis through Interactive Data Corporation, Waltham, Massachusetts. A general description of the estimates for FHA

associated with the simulated MA option.

In the case of HIW Options S, SM-1, SM-2, and SMA, which involve a more careful inspection of the home than does the MA program, claims rates based on Table F.10 would, in all likelihood, be an upper bound of the rates which would actually be observed in such programs, since the inspection accompanying these programs would reveal (and therefore exclude from HIW coverage) some problems which were not known to the purchaser. An alternative way of estimating the claims rates is to exclude problems which were described by survey respondents as involving components of the home which were relatively old and which might therefore have been expected to fail in a short period of time. Claims rates estimated in this way are presented in Table F.12. These claims rates, however, probably represent approximate lower-bound estimates of the numbers of claims which would be observed in the HIW program, since it is unlikely that all old components of the home would be excluded during the HIW inspection process. The estimates of claims rates for the S, SM-1, SM-2, and SMA options used in the analysis were the averages of the upper-bound estimates of Table F.10 and the lower-bound estimates of Table F.12. These must be regarded as only approximations of the true rate which would be observed in an ongoing program.<sup>1/</sup>

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<sup>1/</sup> There is an additional reason why the claims rates and claims costs estimates described in the text must be viewed as only approximations of the actual rates and costs which would be observed in an HIW program. Age of house was asked in the Needs Survey with regard to the age of the home at the time of the survey. Therefore, since homes in the Needs Survey were bought approximately two years prior to the survey, the age of house intervals into which the sample was divided were distorted. For example, the category "less

costs of problems represented in Table F.11 were averaged with those represented in Table F.13. In performing the analysis, the relevant deductible amounts were subtracted from the average costs in estimating repair costs for the HIW programs.

## 5. Administrative Costs

Administrative costs were aggregated into four categories for the feasibility analysis: enrollment costs, presale inspection costs, claims processing costs, and central office staffing costs. The first of these categories was defined to include the clerical time required to process application forms, as well as the time and supplies needed to set up the necessary files. Expenses involved in collecting premium payments were also included.

Inspection costs included the expenses associated with inspecting the property before issuance of the warranty. This included not only time spent actually performing the inspection, but also time and costs associated

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the Demand Survey, which was administered to more recent home purchasers. Because some respondents could only give an intervalized response to the age of house question (see Question 153a of the Needs Survey), it was impossible to correct precisely for this difficulty in the analysis. Since this two-year discrepancy between surveys in the age of house variable is a relatively small one, however, it is extremely unlikely that it represents a serious problem for the analysis. Nevertheless, it is another reason why the claims rates and costs by market segments estimated in the feasibility analysis must be viewed as only approximations of those which would actually be observed in an ongoing program.

cluded in the third cost category--claims processing. Among these costs are clerical time, the cost of validation inspections if they were used in the program, the costs of reimbursing homeowners for repair expenses if repairs were arranged directly by the homeowner, and the time involved in resolving disputed claims.

Finally, central-office staffing costs included the costs of setting up a staff at the HUD Washington office to monitor the program and correct problems as they developed. Direct supervision of field personnel involved with the program is not included in this category but, rather, is subsumed in the three previous functions.

Assumptions about each of these four categories of costs were made on the basis of the current experience of private HIW firms and of the HUD Section 518 program. A complete discussion of the exact assumptions which were used and of how they were developed is given in Appendix F. In general, enrollment costs were assumed to be approximately \$10 or less, depending on the exact type of HIW program which was simulated. Presale inspection costs, which depend on program coverage, were assumed to range from approximately \$35 to \$65 for the non-FHA sector of the market. Somewhat smaller estimates were used for the FHA sector, on the assumption that such inspection activities could be combined partially with the current FHA appraisal-inspection process. On the basis of the experience of the Section 518 program, claims processing costs were assumed to be approximately \$5 per claim for programs involving a validation inspection. Lower costs

would not normally involve a validation inspection which was separate from the actual repair of the defect. Finally, the costs of staffing the central office were assumed to be between approximately \$100,000 and \$200,000, depending on the exact nature of the program which was simulated. (It should be emphasized that these central staffing costs include only Washington staff and do not include field supervisory time.)

## 6. Limitations of the Analysis

Before presenting the results of the simulation analysis, it may be useful to review briefly the limitations of the methodology on which these results are based. As discussed above, the feasibility analysis was developed by drawing upon the survey work and upon the review of existing programs, to make a large number of assumptions about program characteristics and program costs. While the assumptions which were made are consistent with the best available current information about HIW programs, it must be recognized that like all survey data, the information used as the basis for the analysis is subject to error resulting from such factors as sampling variance and inaccuracies in respondent answers to questions. Some error in the assumptions may also result from limitations inherent in the study's retrospective approach to data collection, which was made necessary by the short time duration of the research (see Chapter VI). Therefore, while the feasible program descriptions reported below can be regarded as the best estimates now available of the characteristics of alternative HIW programs, they must be interpreted with the understanding that there is the possibility of a considerable range of error in the estimates.

## B. FEASIBILITY OF ALTERNATIVE PROGRAM OPTIONS

The feasibility analysis began with an examination of a voluntary SM-2 type plan limited to the FHA sector of the market.<sup>1/</sup> SM-2 coverage was chosen as the starting point for the analysis, since it is the coverage which most directly corresponds to that specifically mentioned in the legislation mandating the research. In particular, this coverage would extend for a two-year period, and it would cover the structural components and the mechanical systems of the house, both of which affect the "use and liveability" of the dwelling unit. A voluntary program was considered because it would maximize the number of options available to housing consumers. The results of the feasibility analysis for this program are described in Section 1 below. In addition, Section 1 considers a number of other voluntary programs limited to the FHA sector. Subsequent sections then discuss the feasibility of alternative types of HIW programs.<sup>2/</sup>

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<sup>1/</sup> Exact definitions of the alternative coverage options considered in the analysis are given in Chapter III.

<sup>2/</sup> This research was undertaken on the basis that an HIW program was defined to be feasible at a given price (1) if revenues generated at that price were at least equal to program costs, and (2) if for at least one of the market segments included in the analysis, participation rates were 5 percent or more of the eligible population. Breakeven prices were estimated to within \$5 of their exact value, and, in reporting the results of the analysis, the breakeven price shown for each program is the lowest price divisible by \$5 for which revenues are greater than or equal to costs.

A voluntary SM-2 type plan limited to the FHA sector of the market was found in the analysis to be infeasible. The price which would have to be charged in order to cover costs in such a program would be so high that participation rates would be reduced to the point where they would be insignificant. In particular, it was found that, given the claims rates and claims costs which could be expected under such a program, the expected value of direct claims costs alone would exceed \$225 per warranty, and administrative costs could be expected to add at least another \$100 to the necessary price of such a program. The participation rates which would be observed at prices in this range would be so low that they would make the program infeasible.

Not only was voluntary SM-2 coverage for the FHA sector found to be infeasible, but none of the other program options involving coverage of structural components of the house was feasible as a voluntary FHA-only program, either. Given the average claims rates and claims costs for structural repairs for FHA homes, the cost of providing structural coverage in this sector is too high to make such coverage feasible on a voluntary basis.

Only MA coverage, which does not involve structural components of the home, was feasible as a voluntary FHA sector program. Estimated detailed characteristics for such a program are shown in Table V.1. As shown in the table, the estimated breakeven price for such coverage was \$165, and claims rates would average about .74 claims per warranty. While this program was feasible, however, participation rates were extremely low--only about 6 percent for the FHA sector taken as a whole.



STATISTICS FOR VOLUNTARY MA

PROGRAM LIMITED TO FHA SECTOR

Breakeven price <sup>a/</sup>	\$	165
<b>FHA sector summary</b>		
(a) Number of participants	12,000	
(b) Participation rate	.06	
(c) Valid claims rate	.74	
(d) Total valid claims	2,000	
(e) Repair cost per claim <sup>b/</sup>	\$ 163	
(f) Total claims repair cost	\$ 1,458,000	
(g) Enrollment and prepurchase inspection costs	\$ 130,000	
(h) Administrative claims costs	\$ 264,000	
(i) Total cost in sector	\$ 1,853,000	
(j) Total revenue from sector	\$ 1,990,000	
<b>Non-FHA sector summary</b>		
(a) Number of participants	N.A.	
(b) Participation rate	N.A.	
(c) Valid claims rate	N.A.	
(d) Total valid claims	N.A.	
(e) Repair cost per claim <sup>b/</sup>	N.A.	
(f) Total claims repair cost	N.A.	
(g) Enrollment and prepurchase inspection costs	N.A.	
(h) Administrative claims costs	N.A.	
(i) Total cost in sector	N.A.	
(j) Total revenue from sector	N.A.	
<b>Program summary</b>		
(a) Central staffing costs	\$ 105,000	
(b) Total costs	\$ 1,958,000	
(c) Total revenue	\$ 1,990,000	

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.

N.A. indicates not applicable.

All numbers have been rounded.

homes, the simulated program shown in Table V.1 would not meet this objective. Also, since MA coverage does not include structural components of the home, it could not be expected to cover all defects "seriously affecting the use and liveability of the home."

The implication of the above analysis of voluntary FHA programs limited to the FHA sector is that there is no such program which both would be feasible and would fully respond to a desire to provide protection for all serious home defects. In particular, the expected costs of structural repairs for FHA sector programs are so great that no voluntary program would be able to cover structural components of the house and still be feasible.

While voluntary FHA programs which meet the legislative mandate are not feasible, however, there are a number of alternative ways of structuring HIW programs so as to increase their feasibility. These include (1) making an HIW program mandatory for the FHA sector; (2) subsidizing the program; and (3) opening the program up to the non-FHA sector of the market, as well as to the FHA sector. These possibilities are considered in the sections below.

## 2. Mandatory Programs Limited to FHA Sector

In order to meet Congressional concern for providing HIW coverage for FHA homes, one possible alternative would be to make such protection an integral part of the FHA insurance program--i.e., to make it mandatory. A mandatory program limited to the FHA sector would be feasible for any of the five coverage options. Under such a program, high participation rates are assured, although approximately 13 percent of all homes would

estimated to seek alternative means of financing in order to avoid having purchase HIW protection. It should be noted, however, that the requirement that all FHA households purchase HIW protection in these simulations is essential for obtaining these high participation rates. The effect of such a program would be to require the participation of a substantial number of homeowners who would not otherwise purchase HIW protection, since without the requirement, only a small minority of FHA households (less than 5 percent in all cases) would choose to participate in the programs within the range of the estimated breakeven prices.

As shown in Table V.2, breakeven prices for mandatory FHA-only programs are estimated to range from \$145 for MA coverage to \$355 for SMA alternative. The relatively low price for the MA option reflects the fact that, while claims rates are relatively high for this coverage, average repair costs are considerably lower for this option than for any of the others. This is the case both because high-cost structural repairs are not covered in this option and also because approximately half the problems covered under MA are in the \$50 to \$100 range.

Also important in comparing prices across programs is the relatively small additional cost of extending an SM-1 program for a second year. The estimated price for SM-1 is \$285, while that for SM-2 is \$340--only 20 percent higher. There are two important reasons why breakeven prices do not increase proportionately with length of coverage. One is that the administrative costs associated with the initial enrollment of households into the HIW program and with the presale inspection of the home do not

TABLE V.2  
STATISTICS FOR MANDATORY PROGRAMS

LIMITED TO FHA SECTOR

	S Coverage	SM-1 Coverage	SM-2 Coverage	SMA Coverage	MA Coverage
1. Breakeven price <sup>a/</sup>	\$ .190	\$	\$ 285	\$ 340	\$ 355
2. FHA sector summary	191,000 *	191,000	191,000	191,000	191,000
(a) Number of participants	1.0	1.0	1.0	1.0	1.0
(b) Participation rate	.225	.397	.495	.509	.713
(c) Valid claims rate	43,000	76,000	95,000	97,000	137,000
(d) Total valid claims	\$ 608	\$ 477	\$ 457	\$ 463	\$ 162
(e) Repair cost per claim <sup>b/</sup>	\$26,204,000	\$36,264,000	\$43,351,000	\$45,062,000	\$22,057,000
(f) Total claims repair cost	\$ 2,336,000	\$ 5,858,000	\$ 5,858,000	\$ 7,026,000	\$ 1,168,000
(g) Enrollment and prepurchase inspection costs					
(h) Administrative claims costs	\$ 6,823,000	\$12,034,000	\$15,014,000	\$15,414,000	\$ 4,045,000
(i) Total cost in sector	\$35,363,000	\$54,156,000	\$64,223,000	\$67,502,000	\$27,271,000
(j) Total revenue from sector	\$36,374,000	\$54,561,000	\$65,091,000	\$67,962,000	\$27,959,000
3. Non-FHA sector summary	N.A.	N.A.	N.A.	N.A.	N.A.
(a) Number of participants	N.A.	N.A.	N.A.	N.A.	N.A.
(b) Participation rate	N.A.	N.A.	N.A.	N.A.	N.A.
(c) Valid claims rate	N.A.	N.A.	N.A.	N.A.	N.A.
(d) Total valid claims	N.A.	N.A.	N.A.	N.A.	N.A.
(e) Repair cost per claim <sup>b/</sup>	N.A.	N.A.	N.A.	N.A.	N.A.
(f) Total claims repair cost	N.A.	N.A.	N.A.	N.A.	N.A.
(g) Enrollment and prepurchase inspection costs	N.A.	N.A.	N.A.	N.A.	N.A.
(h) Administrative claims costs	N.A.	N.A.	N.A.	N.A.	N.A.
(i) Total cost in sector	N.A.	N.A.	N.A.	N.A.	N.A.
(j) Total revenue from sector	N.A.	N.A.	N.A.	N.A.	N.A.
4. Program summary					
(a) Central staffing costs	\$ 105,000	\$ 105,000	\$ 105,000	\$ 105,000	\$ 105,000
(b) Total costs	\$35,468,000	\$54,261,000	\$64,328,000	\$67,607,000	\$27,376,000
(c) Total revenue	\$36,374,000	\$54,561,000	\$65,091,000	\$67,962,000	\$27,959,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.

which would apply to other types of coverage as well as to the HIW plans--it is possible to offer a two-year HIW plan at an average price per year which is considerably below that of a one-year program.

The simulation results shown in Table V.2 can also be used to assess the efficiency of the various types of coverage in accomplishing the basic objective of an HIW plan--i.e., to reimburse homeowners for expenses associated with unforeseen repairs. For most of the programs involving structural coverage, total repair costs associated with claims make up approximately 65 to 70 percent of total costs. This implies that for every dollar spent on the program, approximately 65 to 70 cents is actually used to pay for repairs, with the remaining portion being spent on various types of administrative costs, including inspections and claims processing. For the MA program, the fraction of total costs devoted to actual repairs is somewhat higher, approximately 80 percent, reflecting the fact that both the presale inspection and the processing of claims are somewhat less expensive in this type of program.

### 3. Subsidized Voluntary Plans Limited to the FHA Sector

An alternative approach to broadening HIW participation rates would be to subsidize such programs. A subsidy of \$100 per warranty would be sufficient to make voluntary programs limited to the FHA sector feasible for each of the five coverage options considered in the analysis. While such a subsidy would make these programs feasible, the estimated

rise to more than 20 percent of the total FHA population. As shown in Table V.3, the breakeven prices for these subsidized programs would range from \$60 for Option MA to \$275 for Option SMA.

#### 4. Extending Coverage to the Non-FHA Sector

Another alternative way of making a voluntary HIW program feasible would be to make the program available to the non-FHA sector of the housing market as well. As shown in Table V.4, a voluntary program which was available to both FHA and non-FHA households would be feasible for each of the five coverage options considered in the analysis. The principal reason why programs involving structural coverage would be feasible in this case even though they are not feasible in the FHA-only case is that, as noted in Chapter IV, claims rates and costs are considerably lower in the non-FHA sector than they are in the FHA sector. Opening an HIW program to the non-FHA sector, therefore, essentially results in a cross-subsidy from the non-FHA sector to the FHA sector. This is evident in Table V.4 from the fact that for all of the programs involving structural coverage, revenues exceed costs in the non-FHA sector, while the reverse is true in the FHA sector of the market.

While voluntary programs open to both sectors are feasible, participation rates remain low (under 12 percent) for all program options. Therefore, simply making coverage available to all home purchasers would not in itself be sufficient to guarantee that the majority of FHA homes would be covered by HIW protection. A final program variation for accomplishing this objective would be to open an HIW program to both FHA

PHA SECTOR WITH SUBSIDY OF \$100 PER WARRANTY

S Coverage SM-1 Coverage SM-2 Coverage SMA Coverage MA Coverage

Breakeven price<sup>a/</sup> \$ 105 \$ 185 \$ 245 \$ 275 \$ 60

FHA sector summary

(a) Number of participants	13,000	13,000	18,000	11,000	35,000
(b) Participation rate	.07	.07	.09	.06	.19
(c) Valid claims rate	.229	.384	.494	.526	.745
(d) Total valid claims	3,000	5,000	9,000	6,000	27,000
(e) Repair cost per claim <sup>b/</sup>	613	469	452	457	164
(f) Total claims repair cost	\$ 1,871,000	\$ 2,426,000	\$ 4,126,000	\$ 2,591,000	\$ 4,495,000
(g) Enrollment and prepurchase inspection costs	\$ 225,000	\$ 474,000	\$ 653,000	\$ 446,000	\$ 398,000
(h) Administrative claims costs	\$ 483,000	\$ 816,000	\$ 1,446,000	\$ 898,000	\$ 812,000
(i) Total cost in sector	\$ 2,579,000	\$ 3,711,000	\$ 6,224,000	\$ 3,935,000	\$ 5,705,000
(j) Total revenue from sector	\$ 1,400,000	\$ 2,482,000	\$ 4,529,000	\$ 2,964,000	\$ 2,208,000

Non-FHA sector summary

(a) Number of participants	N.A.	N.A.	N.A.	N.A.	N.A.
(b) Participation rate	N.A.	N.A.	N.A.	N.A.	N.A.
(c) Valid claims rate	N.A.	N.A.	N.A.	N.A.	N.A.
(d) Total valid claims	N.A.	N.A.	N.A.	N.A.	N.A.
(e) Repair cost per claim <sup>b/</sup>	N.A.	N.A.	N.A.	N.A.	N.A.
(f) Total claims repair cost	N.A.	N.A.	N.A.	N.A.	N.A.
(g) Enrollment and prepurchase inspection costs	N.A.	N.A.	N.A.	N.A.	N.A.
(h) Administrative claims costs	N.A.	N.A.	N.A.	N.A.	N.A.
(i) Total cost in sector	N.A.	N.A.	N.A.	N.A.	N.A.
(j) Total revenue from sector	N.A.	N.A.	N.A.	N.A.	N.A.

Program summary

(a) Central staffing costs	\$ 105,000	\$ 105,000	\$ 105,000	\$ 105,000	\$ 105,000
(b) Total costs	\$ 2,684,000	\$ 3,816,000	\$ 6,329,000	\$ 4,040,000	\$ 5,810,000
(c) Total revenue	\$ 1,400,000	\$ 2,482,000	\$ 4,529,000	\$ 2,964,000	\$ 2,208,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.

N.A. indicates not applicable.

All numbers have been rounded.

TABLE V.4

STATISTICS FOR PROGRAMS AVAILABLE TO BOTH  
SECTORS WITH FHA PARTICIPATION VOLUNTARY

	S Coverage	SM-1 Coverage	SM-2 Coverage	SMA Coverage	MA Coverage
1. Breakeven price <sup>a/</sup>	\$ 140	\$ 195	\$ 225	\$ 250	\$ 145
2. FHA sector summary					
(a) Number of participants	5,000	12,000	23,000	14,000	17,000
(b) Participation rate	.03	.06	.12	.07	.09
(c) Valid claims rate	.212	.387	.496	.520	.742
(d) Total valid claims	1,000	4,600	12,000	7,000	12,000
(e) Repair cost per claim <sup>b/</sup>	656	470	452	456	164
(f) Total claims repair cost	\$ 707,000	\$ 2,151,000	\$ 5,243,000	\$ 3,354,000	\$ 2,037,000
(g) Enrollment and prepurchase inspection costs	\$ 86,000	\$ 417,000	\$ 826,000	\$ 585,000	\$ 181,000
(h) Administrative claims costs	\$ 171,000	\$ 724,000	\$ 1,837,000	\$ 1,164,000	\$ 369,000
(i) Total cost in sector	\$ 964,000	\$ 3,293,000	\$ 7,907,000	\$ 5,103,000	\$ 2,587,000
(j) Total revenue from sector	\$ 713,000	\$ 2,304,000	\$ 5,265,000	\$ 3,534,000	\$ 2,432,000
3. Non-FHA sector summary					
(a) Number of participants	108,000	149,000	375,000	235,000	206,000
(b) Participation rate	.03	.04	.11	.07	.06
(c) Valid claims rate	.121	.217	.285	.311	.636
(d) Total valid claims	13,000	32,000	107,000	73,000	131,000
(e) Repair cost per claim <sup>b/</sup>	518	361	354	374	124
(f) Total claims repair cost	\$ 6,782,000	\$11,649,000	\$37,843,000	\$27,408,000	\$16,308,000
(g) Enrollment and prepurchase inspection costs	\$ 5,498,000	\$10,318,000	\$26,053,000	\$17,779,000	\$ 9,245,000
(h) Administrative claims costs	\$ 2,073,000	\$ 5,113,000	\$16,411,000	\$11,607,000	\$ 3,881,000
(i) Total cost in sector	\$14,353,000	\$27,074,000	\$80,307,000	\$36,787,000	\$29,434,000
(j) Total revenue from sector	\$15,092,000	\$28,940,000	\$84,465,000	\$58,871,000	\$29,856,000
4. Program summary					
(a) Central staffing costs	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000
(b) Total costs	\$15,491,000	\$30,546,000	\$88,388,000	\$62,064,000	\$32,195,000
(c) Total revenue	\$15,806,000	\$31,245,000	\$89,731,000	\$62,405,000	\$32,288,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.



somewhat lower prices than those necessary for plans limited to the FHA sector. Despite these lower prices, however, it remains true that the great majority of FHA households who would participate in such a mandatory plan would only do so because of the mandatory requirement.

### C. EFFECTS OF ALTERNATIVE ASSUMPTIONS

The feasible program simulations reported above are based on a large number of assumptions concerning the factors which could effect program viability. Therefore, it is important in assessing the reliability of these results to determine the degree to which they are dependent upon these assumptions. This analysis is presented below.

The sensitivity analysis was conducted by altering key parameters concerning each of the three main categories of assumptions which were used in the basic feasibility analysis--i.e., assumptions about claims rates and costs, assumptions about demand, and assumptions about administrative costs. Section 1 describes the alternative assumptions which were used in the sensitivity analysis, and Section 2 presents the results of this work.

The simulations reported below were done for FHA-sector HIW plans involving SM-2 coverage. SM-2 coverage was chosen for this analysis both because this coverage corresponds with that identified in the legislation authorizing the study and also because SM-2 plans were found in the basic feasibility analysis to have relatively high participation. FHA sector

TABLE V.5

STATISTICS FOR PROGRAMS AVAILABLE TO BOTH  
SECTORS WITH FHA PARTICIPATION MANDATORY

	S Coverage	SM-1 Coverage	SM-2 Coverage	SMA Coverage	MA Coverage					
1. Breakeven price <sup>a/</sup>	\$	175	\$	260	\$	270	\$	305	\$	145
2. FHA sector summary										
(a) Number of participants	191,000	191,000	191,000	191,000	191,000	191,000	191,000	191,000	191,000	191,000
(b) Participation rate	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
(c) Valid claims rate	.225	.397	.495	.509	.713	.713	.713	.713	.713	.713
(d) Total valid claims	43,000	76,000	95,000	97,000	137,000	137,000	137,000	137,000	137,000	137,000
(e) Repair cost per claim <sup>b/</sup>	\$ 608	\$ 477	\$ 457	\$ 463	\$ 162	\$ 162	\$ 162	\$ 162	\$ 162	\$ 162
(f) Total claims repair cost	\$26,204,000	\$36,264,000	\$43,350,000	\$45,062,000	\$22,057,000	\$22,057,000	\$22,057,000	\$22,057,000	\$22,057,000	\$22,057,000
(g) Enrollment and prepurchase inspection costs	\$ 2,336,000	\$ 5,858,000	\$ 5,858,000	\$ 5,858,000	\$ 1,168,000	\$ 1,168,000	\$ 1,168,000	\$ 1,168,000	\$ 1,168,000	\$ 1,168,000
(h) Administrative claims costs	\$ 6,823,000	\$12,034,000	\$15,014,000	\$15,414,000	\$ 4,045,000	\$ 4,045,000	\$ 4,045,000	\$ 4,045,000	\$ 4,045,000	\$ 4,045,000
(i) Total cost in sector	\$35,363,000	\$54,156,000	\$64,223,000	\$67,502,000	\$27,271,000	\$27,271,000	\$27,271,000	\$27,271,000	\$27,271,000	\$27,271,000
(j) Total revenue from sector	\$33,505,000	\$49,775,000	\$51,690,000	\$58,390,000	\$27,759,000	\$27,759,000	\$27,759,000	\$27,759,000	\$27,759,000	\$27,759,000
3. Non-FHA sector summary										
(a) Number of participants	66,000	65,000	242,000	149,000	206,000	206,000	206,000	206,000	206,000	206,000
(b) Participation rate	.02	.02	.07	.04	.06	.06	.06	.06	.06	.06
(c) Valid claims rate	.130	.217	.281	.306	.636	.636	.636	.636	.636	.636
(d) Total valid claims	9,000	14,000	68,000	46,000	131,000	131,000	131,000	131,000	131,000	131,000
(e) Repair cost per claim <sup>b/</sup>	\$ 466	\$ 355	\$ 348	\$ 369	\$ 124	\$ 124	\$ 124	\$ 124	\$ 124	\$ 124
(f) Total claims repair cost	\$ 3,968,000	\$ 5,000,000	\$23,656,000	\$23,656,000	\$16,308,000	\$16,308,000	\$16,308,000	\$16,308,000	\$16,308,000	\$16,308,000
(g) Enrollment and prepurchase inspection costs	\$ 3,348,000	\$ 4,499,000	\$16,783,000	\$16,783,000	\$ 9,245,000	\$ 9,245,000	\$ 9,245,000	\$ 9,245,000	\$ 9,245,000	\$ 9,245,000
(h) Administrative claims costs	\$ 1,349,000	\$ 2,232,000	\$10,744,000	\$7,237,000	\$ 3,881,000	\$ 3,881,000	\$ 3,881,000	\$ 3,881,000	\$ 3,881,000	\$ 3,881,000
(i) Total cost in sector	\$ 8,665,000	\$11,731,000	\$51,183,000	\$35,378,000	\$29,434,000	\$29,434,000	\$29,434,000	\$29,434,000	\$29,434,000	\$29,434,000
(j) Total revenue from sector	\$11,489,000	\$16,856,000	\$65,296,000	\$45,501,000	\$29,856,000	\$29,856,000	\$29,856,000	\$29,856,000	\$29,856,000	\$29,856,000
4. Program summary										
(a) Central staffing costs	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000	\$ 174,000
(b) Total costs	\$44,202,000	\$66,061,000	\$115,580,000	\$103,054,000	\$56,879,000	\$56,879,000	\$56,879,000	\$56,879,000	\$56,879,000	\$56,879,000
(c) Total revenue	\$44,992,000	\$66,631,000	\$116,986,000	\$103,891,000	\$57,615,000	\$57,615,000	\$57,615,000	\$57,615,000	\$57,615,000	\$57,615,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

Claims Rates Assumptions. The basic policy simulations of HIW plans involving detailed inspections were based on the averages of two different tabulations of Needs Survey data--one which can be regarded as providing upper-bound estimates of claims rates, and a second which reflects lower-bound estimates. Therefore, to assess the sensitivity of the results to the claims rates assumptions, simulations of both a voluntary SM-2 plan for the FHA sector and also a mandatory SM-2 plan for the FHA sector were performed by using the upper-bound and lower-bound claims rates tabulations (see Appendix F, Tables F.10 and F.12). Repair cost estimates were based on the same Needs Survey tabulations used to calculate the claims rates (Tables F.11 and F.13).

Demand Assumptions. HIW program participation rates were estimated in the basic analysis on the basis of proportions of Demand Survey respondents who reported that they were "absolutely certain" to purchase the HIW plans tested in the survey at various prices. As discussed more fully in Chapter III, however, respondents who characterize themselves as "very likely" to buy an HIW plan are also of interest, since this demand concept may indicate possible shifts in demand curves which could occur as the public increases its awareness of and experience with HIW programs. Therefore, the feasibility analysis was repeated by using

performed using higher and lower administrative cost figures. The exact variations used for each individual component of administrative costs depended on the sources and apparent reliability of the initial estimate used in the feasibility analysis; but, in general, costs were varied by between 25 and 50 percent in this work. In addition, in performing the high-cost simulations, the assumption was made that presale inspections for an HIW program would have to be done by HUD personnel other than those doing appraisals and that inspection costs would therefore be the same in the FHA sector as in the non-FHA sector. Table V.6 shows the specific changes in administrative cost estimates which were used in the high-cost and low-cost simulations.

## 2. Results of Sensitivity Analysis

Claims rates assumptions. Several of the results of the basic feasibility analysis reported in Section B are quite dependent on claims rates assumptions. In particular, as shown in Table V.7, the finding of the basic analysis that an SM-2 program option involving structural coverage would not be feasible as a voluntary FHA-only program does not

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<sup>1/</sup> Sensitivity analysis was also conducted by varying a second demand-related assumption. Rather than assuming linear demand curves, log-linear demand curves were employed in order to allow for possible curvature in the demand relationship. The results of this work have not been reported in the text because varying the assumed shape of the demand curve was not found to have any significant effect on any of the conclusions of the analysis.

	High Cost Assumptions	Low Cost Assumptions
Enrollment costs	+ 50%	-50%
Resale inspection costs	+140% <sup>a/</sup>	-25%
Claims processing costs	+ 25%	-25%
Central office staffing costs	+ 50%	-50%

<sup>a/</sup> As discussed in the text, this high change represents changed assumptions regarding whether the inspection could be performed by the same staff person performing the FHA appraisal.

TABLE V.7

SIMULATIONS USING HIGH AND LOW CLAIMS RATES  
FOR VOLUNTARY SM-2 PLAN LIMITED TO FHA SECTOR

	Simulation Based on Average Rates	Simulation Based on High Rates	Simulation Based on Low Rates
1. Breakeven price <sup>a/</sup>	N.S.	N.S.	\$ 285
2. FHA sector summary			
(a) Number of participants	N.S.	N.S.	\$ 12,000
(b) Participation rate	N.S.	N.S.	\$ .06
(c) Valid claims rate	N.S.	N.S.	\$ 379
(d) Total valid claims <sup>b/</sup>	N.S.	N.S.	\$ 5,000
(e) Repair cost per claim	N.S.	N.S.	\$ 464
(f) Total claims repair cost	N.S.	N.S.	\$ 2,157,000
(g) Enrollment and prepurchase inspection costs	N.S.	N.S.	\$ 433,000
(h) Administrative claims costs	N.S.	N.S.	\$ 736,000
(i) Total cost in sector	N.S.	N.S.	\$ 3,327,000
(j) Total revenue from sector	N.S.	N.S.	\$ 3,499,000
3. Non-FHA sector summary			
(a) Number of participants	N.A.	N.A.	N.A.
(b) Participation rate	N.A.	N.A.	N.A.
(c) Valid claims rate	N.A.	N.A.	N.A.
(d) Total valid claims <sup>b/</sup>	N.A.	N.A.	N.A.
(e) Repair cost per claim	N.A.	N.A.	N.A.
(f) Total claims repair cost	N.A.	N.A.	N.A.
(g) Enrollment and prepurchase inspection costs	N.A.	N.A.	N.A.
(h) Administrative claims costs	N.A.	N.A.	N.A.
(i) Total cost in sector	N.A.	N.A.	N.A.
(j) Total revenue from sector	N.A.	N.A.	N.A.
4. Program summary			
(a) Central staffing costs	N.S.	N.S.	\$ 105,000
(b) Total costs	N.S.	N.S.	\$ 3,432,000
(c) Total revenue	N.S.	N.S.	\$ 3,499,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

Alterng claims rates assumptions also significantly affects the breakeven price for a mandatory SM-2 plan. As shown in Table V.8, use of upper-bound claims rates results in a breakeven price of \$405, some 20 percent higher than that estimated in the basic analysis. When lower-bound claims rates estimates are used, the breakeven price drops to \$270.

The implication of these findings is that the exact results of the basic analysis must be used with some caution. In some cases, programs which were found in the basic analysis to be infeasible may in fact be feasible if lower, but still plausible, claims rates are assumed. Similarly, use of lower-bound or upper-bound estimates of claims rates may change the breakeven prices of programs by as much as 20 to 25 percent.

It should also be noted, however, that the basic conclusions drawn from the feasibility analysis remain essentially unchanged after altering the claims rates assumptions as discussed above. In particular, while a voluntary FHA-only program becomes feasible with lower claims rates, participation rates nevertheless remain relatively low. Thus, it remains true that such a program could not be expected to ensure that most FHA homes were covered by HIW protection. Similarly, while the price changes noted above are not trivial, these changes are only about 25 percent. Thus, the basic order of magnitude of the estimated breakeven prices is not affected by the changed claims rates assumption.

TABLE V.8

## SIMULATION USING HIGH AND LOW CLAIMS RATES FOR

## MANDATORY SM-2 PLAN LIMITED TO FHA SECTOR

	Simulation Based on Average Rates	Simulation Based on High Rates	Simulation Based on Low Rates
1. Breakeven price <sup>a/</sup>	\$ 340	\$ 405	\$ 270
2. FHA sector summary			
(a) Number of participants	191,000	191,000	191,000
(b) Participation rate	1.0	1.0	1.0
(c) Valid claims rate	.495	.608	.382
(d) Total valid claims	95,000	116,000	73,000
(e) Repair cost per claim <sup>b/</sup>	457	444	461
(f) Total claims repair cost	\$ 43,351,000	\$ 52,655,000	\$ 33,717,000
(g) Enrollment and prepurchase inspection costs	\$ 5,858,000	\$ 5,858,000	\$ 5,858,000
(h) Administrative claims costs	\$15,014,000	\$18,430,000	\$11,582,000
(i) Total cost in sector	\$64,223,000	\$75,943,000	\$51,157,000
(j) Total revenue from sector	\$65,091,000	\$77,535,000	\$51,690,000
3. Non-FHA sector summary			
(a) Number of participants	N.A.	N.A.	N.A.
(b) Participation rate	N.A.	N.A.	N.A.
(c) Valid claims rate	N.A.	N.A.	N.A.
(d) Total valid claims	N.A.	N.A.	N.A.
(e) Repair cost per claim <sup>b/</sup>	N.A.	N.A.	N.A.
(f) Total claims repair cost	N.A.	N.A.	N.A.
(g) Enrollment and prepurchase inspection costs	N.A.	N.A.	N.A.
(h) Administrative claims costs	N.A.	N.A.	N.A.
(i) Total cost in sector	N.A.	N.A.	N.A.
(j) Total revenue from sector	N.A.	N.A.	N.A.
4. Program summary			
(a) Central staffing costs	\$ 105,000	\$ 105,000	\$ 105,000
(b) Total costs	\$64,328,000	\$76,048,000	\$51,262,000
(c) Total revenue	\$65,091,000	\$77,535,000	\$51,690,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.

N.A. indicates not applicable.



the higher estimates of demand described in Section 1 are used. As shown in Table V.9, the breakeven price for such a plan is approximately \$45. While such a program is feasible, participation rates remain quite low--fewer than 15 percent of all eligible households are estimated to participate in such a program. Thus, the changes in the demand assumptions do not alter the basic conclusion that the great majority of FHA home buyers would not choose to participate in a voluntary W program.

Administrative cost assumptions. As shown in Table V.10, use of higher administrative cost assumptions results in an increase of \$65 in the cost of a mandatory SM-2 plan limited to the FHA sector of the market. The corresponding price decrease associated with the use of lower administrative cost assumptions is \$30. The principal reason why the estimated increase is much larger than the estimated decrease lies in one of the assumptions made for the high-cost analysis: that inspections in the FHA sector would have to be done by personnel other than regular FHA appraisors. As indicated by the changes in the breakeven prices, the increased costs associated with using separate personnel are very substantial.

In addition to simulating a mandatory SM-2 plan with altered administrative cost assumptions, an attempt was also made to perform such simulations for a voluntary SM-2 plan limited to the FHA sector of the market. It was found in this work, however, that the altered cost assumptions did not affect the basic conclusion that a voluntary SM-2

TABLE V.9

## SIMULATION OF VOLUNTARY SM-2 PROGRAM LIMITED TO FHA SECTOR

## USING MORE INCLUSIVE DEFINITION OF DEMAND

	Simulation Using Basic Definition of Demand	Simulation Using Broader Definition of Demand
1. Breakeven price <sup>a/</sup>	N.S.	\$ 345
2. FHA sector summary		
(a) Number of participants	N.S.	27,000
(b) Participation rate	N.S.	.14
(c) Valid claims rate	N.S.	.484
(d) Total valid claims	N.S.	14,000
(e) Repair cost per claim <sup>b/</sup>	N.S.	\$ 457
(f) Total claims repair cost	N.S.	\$ 6,179,000
(g) Enrollment and prepurchase inspection costs	N.S.	\$ 965,000
(h) Administrative claims costs	N.S.	\$ 2,138,000
(i) Total cost in sector	N.S.	\$ 9,282,000
(j) Total revenue from sector	N.S.	\$ 9,430,000
3. Non-FHA sector summary		
(a) Number of participants	N.A.	N.A.
(b) Participation rate	N.A.	N.A.
(c) Valid claims rate	N.A.	N.A.
(d) Total valid claims	N.A.	N.A.
(e) Repair cost per claim <sup>b/</sup>	N.A.	N.A.
(f) Total claims repair cost	N.A.	N.A.
(g) Enrollment and prepurchase inspection costs	N.A.	N.A.
(h) Administrative claims costs	N.A.	N.A.
(i) Total cost in sector	N.A.	N.A.
(j) Total revenue from sector	N.A.	N.A.
4. Program summary		
(a) Central staffing costs	N.S.	\$ 105,000
(b) Total costs	N.S.	\$ 9,387,000
(c) Total revenue	N.S.	\$ 9,430,000

<sup>a/</sup> Breakeven price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.

N.A. indicates not applicable.

All numbers have been rounded.

SIMULATIONS USING HIGH AND LOW ADMINISTRATIVE COST  
ESTIMATES FOR MANDATORY SM-2 PLAN LIMITED TO FHA SECTOR

	Simulation Using Basic Cost Estimates		Simulation Using High Cost Estimates		Simulation Using Low Cost Estimates	
1. Break-even price <sup>a/</sup>	\$	340	\$	405	\$	310
2. FHA sector summary						
(a) Number of participants		191,000		191,000		191,000
(b) Participation rate		1.0		1.0		1.0
(c) Valid claims rate		.495		.495		.495
(d) Total valid claims		95,000		95,000		95,000
(e) Repair cost per claim <sup>b/</sup>		457		457		457
(f) Total claims repair cost	\$	\$43,351,000	\$	\$43,351,000	\$	\$43,351,000
(g) Enrollment and prepurchase inspection costs	\$	\$5,858,000		\$14,358,000		\$4,394,000
(h) Administrative claims costs		\$15,014,000		\$18,358,000		\$11,261,000
(i) Total cost in sector		\$64,223,000		\$76,067,000		\$59,005,000
(j) Total revenue from sector		\$65,091,000		\$77,534,000		\$59,374,000
3. Non-FHA sector summary						
(a) Number of participants		N.A.		N.A.		N.A.
(b) Participation rate		N.A.		N.A.		N.A.
(c) Valid claims rate		N.A.		N.A.		N.A.
(d) Total valid claims		N.A.		N.A.		N.A.
(e) Repair cost per claim <sup>b/</sup>		N.A.		N.A.		N.A.
(f) Total claims repair cost		N.A.		N.A.		N.A.
(g) Enrollment and prepurchase inspection costs		N.A.		N.A.		N.A.
(h) Administrative claims costs		N.A.		N.A.		N.A.
(i) Total cost in sector		N.A.		N.A.		N.A.
(j) Total revenue from sector		N.A.		N.A.		N.A.
4. Program summary						
(a) Central staffing costs	\$	105,000	\$	158,000	\$	53,000
(b) Total costs		\$64,328,000		\$76,225,000		\$59,058,000
(c) Total revenue		\$65,091,000		\$77,534,000		\$59,374,000

<sup>a/</sup> Break-even price reported is the lowest price divisible by 5 at which program revenues exceed costs.

<sup>b/</sup> Repair cost per claim is reported net of the program deductible which has already been subtracted out.

N.S. indicates no feasible solution at which more than 5 percent of any market segment would purchase a warranty.

N.A. indicates not applicable.

All numbers have been rounded.



analyses to examine a number of key factors related to the development of future federal policy concerning HIW programs. Section A brings together the principal results of the previous four chapters as they apply to the question of whether there is a need for a public HIW program. Section B examines issues related to the features which a public HIW program, if desirable, should incorporate. Section C discusses some of the potential impacts of a public HIW program.

#### A. NEED FOR AN HIW PROGRAM

Determination of the need for a public HIW program is a two-fold process in which a set of objective conditions concerning the incidence of housing defects, consumer preferences, and the availability of private market alternatives must be integrated with the subjective evaluation of policymakers concerning the degree to which it is in the public interest to protect home buyers against unanticipated expenses. This research addresses the first step in this process: the factual basis upon which a final determination can be made.

The Needs Survey data suggest that while there is some possibility of a purchaser of an existing home experiencing a very large loss of \$1,000 or more from unexpected repairs, the losses incurred by the large majority of buyers are much more modest. In particular, the data show that fewer than half of all purchasers of existing homes experienced an unanticipated problem costing \$100 or more within the first two years

bility (.48) of experiencing such problems than buyers in the non-FHA sector (.36), but in both cases about half of these problems would cost less than \$400 to repair. Although there is some risk that households will incur repair expenditures over \$1,000 per household, such problems are likely to be experienced by less than 15 percent of the homeowners in the FHA sector and less than 8 percent of homeowners in the non-FHA sector. The average expected loss over the two years after purchase due to unanticipated repairs in the FHA and non-FHA sectors is \$441 and \$255, respectively.

The majority of owners in both the FHA and non-FHA sectors do not consider the risk and expected costs of unanticipated problems to be outside their capacity to self-insure against such problems. Although about 38 percent of the families surveyed in each sample expressed an active demand for at least one of the five plans tested, no single plan attracted more than 14 percent of the households at prices which would be necessary for premium revenues to just cover program costs. Homeowners were more interested in purchasing a detailed inspection than in purchasing most of the warranty plans tested, but the demand for such inspections is less than 13 percent of the market.

This preference for self-insuring may be quite rational when the expected benefits and costs are compared. A comparison (see Table VI.1) of the prices of several feasible HIW programs and the expected value of payments from claims under each plan shows that in general the prices of such plans exceed their average returns by a

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HIW Plan	Price	Expected Receipts From Claims
S	\$190	\$137
SM-1	285	177
SM-2	340	226
SMA	355	236
MA	145	116

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Note: This table is based on feasible simulations reported in Table V.2. Expected receipts per claim were computed by multiplying valid claims rates by the repair cost per claim, less the deductible.

such warranties are, on average, paying a substantial cost in order to protect themselves from the relatively small possibility of very large unexpected repair expenses. It should be noted, however, that even though premium costs exceed the expected payments of the plans, the benefit of eliminating the small risk of a very large expense may make HIW programs worthwhile for some home buyers.

An additional factor which must be considered in assessing the need for a federal HIW program is whether the existing market can satisfy the demand. While overall demand was low, homeowners tend to favor coverage of structural and mechanical components of the house over coverage of appliances. These preferences are in contrast to the actual and projected growth patterns of the two types of firms in the existing private HIW industry. It appears that this contrast results from the fact that the service contract type of warranty is a product designed to appeal primarily to the preferences and concerns of sellers and realtors. Consequently, the growth of these firms depends only partially on the overall preferences of buyers.

The potential for marketing HIW plans to home sellers was examined briefly in the Demand Survey by asking homeowners whether they would purchase an HIW program if, as home sellers, their real estate agent asked them to do so. About 59 and 50 percent of the FHA and non-FHA samples, respectively, expressed a willingness to accede to such a request. While this is only a very crude measure of actual behavior,



among home sellers.

The relatively slower growth of the existing inspection-type firms does not, in itself, suggest that such programs are less attuned to the homeowner's needs for protection. In fact, the results of the Demand and Needs Surveys suggest that to the extent that any kind of HIW protection is desired, the coverage offered by these programs does address the preferences and needs of homeowners quite accurately. The past growth of these programs appears to have been limited by several factors, including the basic low levels of HIW demand at feasible prices, the relatively low level of buyer awareness of this service, seller and real estate agent resistance to inspections, and the problems of developing a network of trained inspectors. It is not possible to say how important these constraints will continue to be in the next several years, but the future performance of several new inspection-type programs which have recently entered the market should provide a better view of the growth potential for this segment of the HIW industry.

#### B. ISSUES IN DESIGNING PUBLIC HIW PROGRAMS

The general low levels of demand and the sensitivity of demand to price impose significant constraints on the design of a feasible public-sector HIW program. If policymakers determine that there is a need to develop such a program, decisions must be made concerning such key design factors as scope of coverage, length of coverage, voluntary

## 1. Scope of Coverage

One very consistent finding of the study, which would be a significant factor in setting up an HIW program, is the importance of structural and mechanical systems coverage. These types of problems comprise 60 to 70 percent of both the total number of major problems and total costs of repairs incurred within two years after the purchase of a house. Almost all of the owners in both the FHA and non-FHA samples reflected concern for these risks by ranking them either first or second as the most important focus of an HIW program.

## 2. Length of Coverage

To the extent that HIW coverage is desired at all, there is a strong preference among home purchasers for extending this coverage over several years. Furthermore, the Needs Survey data suggest that such coverage could be extended relatively inexpensively. More than 60 percent of respondents in both samples want multiyear coverage, while 80 percent of the unanticipated problems which occur within two years after purchase are incurred in the first year; 55 percent are incurred in the first six months.

Extension of coverage can be provided in two ways. Renewability of existing one-year warranties provides extended protection as an optional feature of the program. However, as representatives of existing

costs, is then necessary to reduce the potential for increasingly high claims costs.

An alternative is to initially set up the program for more than one year. An HIW program designed for a two- or three-year coverage period appears likely to have maximum appeal to homeowners, with a minimum risk for the program itself. The sharp decline in the frequency of problems occurring in the last half of the first year and in the second year after purchase suggests that problem rates in the third year are unlikely to be any higher than those of the second year, and may be even lower. This would allow the relatively high claims costs of the first year, plus the administrative costs of performing the inspection, to be spread over a longer period and to be supported by the revenue of the relatively profitable second and third years. Although total costs of the program increase, the average annual cost declines.

### 3. Payment Schedules

Although the data show a fairly strong sensitivity of HIW demand to price, it is not clear how dependent demand is on the form of the payment schedule. No clear preference for a monthly, quarterly, or lump sum payment was noted in the Demand Survey.<sup>1/</sup> However, since about

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<sup>1/</sup> Demand for various HIW programs was not tested against prices expressed in monthly terms primarily because of the methodological difficulty of measuring changes in preferences for small marginal changes in price. Only a general question on the payment mechanism was asked.

Survey, only if a substantial number of home buyers base their partial decisions on current marginal costs rather than on total costs. While direct evidence pro or con can be offered, the resistance of buyers to the relatively small FHA insurance fee and the practice of shopping for small differences in mortgage interest rates suggest that consumers are concerned about total costs even when monthly charges are quite low. An easy payment schedule cannot be assumed to significantly increase the level of demand for HIW programs.

The private programs have operated in terms of a lump sum payment primarily out of necessity. Most deal with the seller where a lump payment at closing is the most efficient mechanism possible. Furthermore, an extended payment schedule for home buyers is plausible only if the program can bear the administrative cost of frequent billings, or if an efficient tie into the mortgage payment is possible. Private programs have not had the resources to devote to either financing a payment schedule or developing the institutional relations with lenders that would allow integration of the warranty cost with monthly mortgage, insurance, and tax charges. A public program could, however, overcome these constraints and thus have substantially more flexibility in designing a program attractive to the widest possible market.

#### 4. Mandatory vs. Voluntary Participation

The preference for self-insurance and the price sensitivity noted in the demand analysis virtually preclude the feasibility of

price at which premium revenues would cover program costs. Voluntary programs open to FHA- and non-FHA-insured houses can be feasible, but participation rates are likely to be very low. If the protection provided by an HIW program against unanticipated housing problems and repair expenses is believed to be a necessary and important public goal, a voluntary program cannot be relied upon to fulfill that goal for more than a few families. Other mechanisms to encourage participation are needed. One means, a price subsidy, was tested but results indicate that the success in increasing participation would be very limited. A \$100 subsidy for Option SM-2 only increased participation to 9 percent of the FHA market. Mandatory participation is the only way to ensure the widespread use of HIW protection at a reasonable price.

Mandatory participation has the additional advantage of eliminating any potential for adverse selection, caused by home buyers with high risks of claims also being the most likely participants in a voluntary program. Adverse selection is a potentially serious problem because it works against the insurance principle of risk pooling. The evidence from the Demand and Needs Surveys suggest that in practice adverse selection across households with different market characteristics such as income, house price, and age of house may not be a serious problem since the analysis of demand noted little variation in demand by household characteristics. This suggests that program participation would be random and thus would not necessarily be associated with the probability of having a claim. The danger of

tory. However, as noted in Chapter III, there was a tendency for people who had recently experienced problems to express a higher demand for options than people who had not experienced problems. This suggests that, within market segments, households facing the highest risks may be more attracted to a voluntary program and thus some adverse selection is possible.<sup>1/</sup>

## 5. Inspections

There is considerable debate among proponents of the various existing HIW plans about the role and nature of inspections. Representatives of the service contract type programs argue that detailed inspections are very costly, pose problems of adequate quality control, and are viewed with reservation by the sellers and real estate agents because they highlight negative aspects of the house. Moreover, they argue that many of the problems which do occur are not subject to consistent detection through an inspection. Representatives of the inspection type programs, however, point out that an inspection is the only way to ensure full and complete disclosure about the condition of the house, so that all parties to the sale (seller, agent, and buyer) have equal information. They also argue that coverage of structural elements in a voluntary HIW program would be subject to serious adverse selection problems without some type of screening inspection.

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<sup>1/</sup>Conclusions about adverse selection based on the current study must of necessity be tentative, since in a one-time study there is

inspection, but rather detailed versus cursory inspection. Among existing

private HIW firms even the service contract type programs involve some type of implicit or explicit cursory inspection to limit the potential for adverse selection. Under a mandatory program, the possibility of adverse selection is eliminated; but some cursory level of inspection is still necessary to prevent claims on home components which are obviously defective at the time of purchase. As noted in Chapter IV (Table IV.14), lack of even a cursory inspection could increase claims rates by 18 to 24 and 46 to 106 percent in the FHA and non-FHA markets, respectively.

Detailed inspections also provide information on potential problems and required maintenance, in addition to defining warranty coverage. This information function is a desirable service in its own right. The experience of the private firms who sell four to five times more inspections than warranties and the demand analysis in Chapter III confirm the importance of inspections as a separate product.

A key determinant in resolving the debate is the cost-effectiveness of inspections in minimizing claims rates. While only a formal evaluation of problem incidence under various types of inspection processes can completely resolve the question, the analysis in Chapter IV (Table IV.14) provides some tentative evidence. When detailed inspection processes are approximated, potential claims rates for the S, SM, and SMA programs decrease from cursory inspection levels by 28 to 40 percent in the FHA sample, and by 40 to 49 percent in the

also be expected in claims processing costs which to some degree are traded off against inspection costs.

In addition to the design problems of specifying the role and level of inspections which should be included in an HIW program, there are a number of program implementation questions concerning inspections which must be addressed. A point which was made repeatedly during discussions with leaders of existing warranty programs is that the present inspection-oriented programs, as currently structured, require very detailed inspections performed by professionals who are highly trained in the area of home repairs. The implication is that a government warranty program modeled after this segment of the industry would find it necessary to obtain the services of a large number of such professionals and to monitor their work very carefully. In particular, it should be noted that most of the personnel who are currently employed in appraising FHA houses might not be able to perform this inspection function without a good deal of additional training. The reason for this is simply that these individuals are, by the nature of their current work, principally appraisers, not home repair experts. While it was assumed for the purpose of the analysis in Chapter V that FHA appraisal procedures could be modified to include detailed inspection at a relatively modest marginal cost, it is not certain that this would be the case. As indicated in the sensitivity analysis (Table V.10), altering this assumption would increase breakeven prices.



... of the any kind of warranty program which made use of  
FHA appraisers. Indeed, such appraisers could almost certainly provide the type of quick inspection which is usually associated with the service contract warranty. To the extent that a federal program differed from the inspection-oriented programs by taking a more purely insurance perspective in which the reimbursement of unanticipated expenses rather than the disclosure aspects of a detailed inspection was of primary importance, the use of FHA personnel with limited additional training also might be feasible.<sup>1/</sup>

The design and implementation of the inspection process is one of the most critical problems in designing an HIW program. Under a voluntary program, the trade-off between effective inspections and minimizing claims rates assumes even greater importance with the increased potential for adverse selection. The capacity to find, train, and supervise qualified inspectors is likely to be a short-run implementation problem of substantial proportion.

### C. IMPACT OF A PUBLIC PROGRAM

A new public HIW program is likely to have an effect on both the existing private HIW industry and on the FHA insurance program. Although it is not possible to fully predict the impact of a public HIW program, a number of possible impacts can be identified. These are discussed below.

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<sup>1/</sup> Representatives of St. Paul Home Protection Program, the only firm which currently adopts this perspective, have seriously considered

for this is that the FHA segment of the existing housing market is relatively small, accounting for only about 7 percent of the total market for existing homes. Hence, even if FHA homes were proportionately represented in the overall inspection-warranty market, the loss of this business would result in only a relatively modest decrease in total contracts written by these companies. This impact may be even further lessened by the fact that FHA homes currently appear to be underrepresented in the private HIW market. Representatives of both types of existing companies reported that they did not in general have any way of knowing whether the homes which they were covering had FHA mortgages. They believed, however, that the share of FHA homes in their total volume is probably not proportional to the share of the FHA market in the overall existing housing market.<sup>1/</sup>

The existence of a public HIW program limited to the FHA sector could have some positive effects on the private HIW firms as well. A successful program limited to the FHA sector could increase

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<sup>1/</sup> Given the uncertainty of conducting business in a new industry and the higher risks (i.e., claims rates) in the FHA sector, this underrepresentation is understandable. Representatives of the inspection firms also suggested that FHA owners may tend not to purchase the private inspection service because they are under the impression that the FHA appraisal process includes an adequate inspection. No such tendency was noted, however, in the Demand Survey (see Chapter III, Table III.8). It should also be noted that no statistically significant difference in the number of families reporting prior experience with warranties was found between the FHA and non-FHA samples in the Demand Survey (see Appendix Table D.17). This apparent discrepancy between the survey data and the impressions of the firms could easily be the result of sampling error in the data.

the visibility of HIW programs to non-FHA buyers, to sellers, and to real estate agents. As noted earlier, low levels of consumer awareness in general and real estate agent resistance in particular appear to be major constraints on the growth of the inspection-oriented firms.

A further stimulus to the growth of the private firms might also occur, depending on the details of the inspection process. The difficulty of implementing and maintaining a network of trained inspectors within the FHA area office structure may suggest the use of a combination of public and private resources in implementing an HIW program. In particular, inspections could be provided by existing firms under contractual arrangements, with claims processing and payment activities remaining under the FHA organization. Use of this procedure, which would be similar to one sometimes used to perform the appraisal function under the current FHA program, would of course substantially increase the market potential of the private inspection industry.

The effects on the private market of a program available to the non-FHA sector would in all likelihood be much greater. There is a substantial possibility that a government program available to the non-FHA sector of the market would slow or perhaps even halt the current rapid growth of the private firms in this industry. The principal reason for this effect is that the government breakeven price would probably be lower than that of the private firms in the market. In the case of voluntary SM-1 coverage open to both sectors, for instance, the esti-

likely that a government plan open to non-FHA home purchasers could significantly undercut the market for privately provided HIW services.

## 2. Effects of a Mandatory HIW Program on Demand for FHA Insurance

Mandatory participation would extend HIW coverage to all FHA-insured homeowners but would impact on the size of the FHA insurance program by deterring some prospective home buyers, who might otherwise participate, from applying for an FHA mortgage. A measure of how widespread such a deterrent effect might be was obtained in the FHA sample of the Demand Survey by asking respondents whether they would have applied for their FHA mortgage if they had been required to buy a detailed inspection and one-year warranty on the main structure of their house, at a cost of \$200.

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<sup>1/</sup> There appear to be several reasons for the differences in prices between the public and private sectors. One of these is the fact that it has been assumed that the government would not engage in active marketing of the program. Ongoing marketing expenses are a significant share of the total costs of many private firms. Second, private market prices include returns to the capital which the private sector has invested in developing the market for HIW services, as well as returns to the risk inherent in attempting to develop a new industry. No such return would be necessary in the public sector, since the government would be implicitly assuming the risk that the program would turn out ultimately not to be successful and therefore have to be abandoned. Yet a third factor accounting for the differences in prices is that the government is able to be self-insuring and therefore would be able to avoid the substantial costs which some HIW companies bear in purchasing liability insurance and--in the case of some inspection HIW firms--in purchasing underwriting services to protect their customers in the event they should become insolvent.

a source other than FHA (about 60 percent of the FHA sample), 21 percent said they would not have applied for an FHA mortgage if an inspection-warranty had been a mandatory requirement. This is 13 percent of the total FHA sample, which provides an estimate of the extent to which a mandatory program would reduce the size of the FHA mortgage insurance market.

Those who reported that they could not have obtained a mortgage from any source other than FHA presumably would have had no choice but to conform to the mandatory requirements. Even so, it is pertinent to note that among this group, 21 percent also said they would not have applied for an FHA mortgage. This suggests that if HIW coverage had been mandatory, some of these home buyers might have redoubled their efforts to seek another mortgage source.

The estimated 13 percent decline in the FHA market may be an underestimate in the decline which would actually occur under a mandatory HIW program, since it does not reflect possible resistance to such a provision from the sellers, lenders, and real estate agents involved in the transaction. To the extent that an HIW program with its accompanying home inspection increased closing costs or created delays, the attractiveness of the FHA program would be likely to decrease.



